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POPULAR Computing WEEKLY

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31 July-6 August 1986 | Vol 5 No 31

Saga to launch cheap Z80 micro

COLOUR FEATURE



The Image System on Amstrad CPCs – p15

Plus

Hardware – InterGem disc interface for the PCW8256

Preview – Druid from Firebird

- **Saga is to launch a Z80-based micro in the next few months**
- **The machine will have printer and disc drive bundled, and will be aimed at the serious user**
- **It will be priced in the Amstrad bracket at £299 excluding VAT.**

Full details below and inside

SPECTRUM add-on manufacturers Saga plans to launch a new micro the Saga Compliment, in the next few months According to David White of Saga the machine's launch date hasn't yet been fixed, 'but I could launch in in four weeks time if I wanted to', he says

He describes the machine as a "complementary system" but is reticent as to what this means It's being billed as a very powerful word processing station he says It will be Z80 based but definitely won't be Amstrad compatible and White is unconvinced of the attractions of the Amstrad machines' CP/M capability "CP/M programs still have to be ported across to the Amstrads, and you can still run into limitations on Ram and so on Amstrad hasn't quite opened up everything

The Compliment is he says an all in one workstation and its price brings it in below the Amstrad PCW 8256, and although it won't come with a monitor it could still work out cheaper White however doesn't see it as an Amstrad basher, and expects it to sell steadily even if Amstrad were

Continued on page 4 ▶

THIS WEEK'S NEWS

- Opus joins the PC clone set
- Tatung's new Einstein to be launched at PCW show
- Acorn's Baby BBC – more details


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ABC

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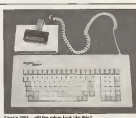
How compatible is the new BBC?

FURTHER details are emerging about the new Acorn machine due out this Autumn The Baby BBC – also known as the BB – will have 128K Ram, and will be essentially a Master sporting a version 5 0 operating system Basic version 4 0 and ADFS version 2 It will not however be compatible with earlier DFS versions and according to developers working on it doesn t appear to support sideways Roms

The machine does, however, pull-down menus and has radically improved graphics facilities But these however, seem to be memory guzzlers, and it appears that in Mode 1 only 28K of the machine s notional 128K of Ram is available for programming

There is also some controversy over the machine's compatibility Acorn insiders maintain that it is highly compatible with earlier BBC machines but one software developer was sceptical, estimating compatibility at around 30 per cent.

Acorn is in any event having a collection of Acornsoft and third party games converted for bundling with the new machine, so it certainly cannot be 100 per cent compatible



Saga's 2001 – will the micro look like this?

Saga plans new Z80 based computer

◄ continued from page 1

to reduce the price of the 8256 at the launch of its PC compatible

The disc drive is to be 3½ inch and will have a capacity of 256K, while the printer will have a speed " in excess of 100 cps ", an NLQ mode and will be Epson compatible Considering Saga s history some measure of compatibility with the Spectrum would seem logical, but White refuses to comment on this – nor will he reveal the amount of Ram the Complement has

This is Saga's first venture into micro manufacture although there have been rumours that the company intended to make the plunge for some months now The move is quite clearly a consequence of Amstrad s purchase of the Sinclair name – Saga is best known for its Spectrum add-on keyboards and *The Last Word* Spectrum word processor and the advent of an Amstradised Spectrum sporting proper keyboard and directed at games players means Saga s traditional market will dry up

The Complement could however be produced quite cheaply if Saga based it on one of its range of keyboards, as this could cut the cost of designing and producing the machine's plastic moulds

Power supplies from Peaksoft

PEAKSOFT is to launch a new heavy duty range of computer power supplies on August 18 The supplies are guaranteed for two years and can be returned for service or repair for a fixed price any time after that The first models will be for the Commodore 64 (£24 95) and the Electron (£14 95) and these will be followed by Dragon 32, 64 and 128 versions at £18 95

Details from Peaksoft, 48 Queen Street Balderton, Newark, Notts NG24 3NS (0636-705230)

Micronet ends up behind bars

THE Midnight Micronetters Club, the London-based organisation used by Micronet members as an excuse to go to pubs is taking to the road from August 29 and the organisers now appear to be using it as an excuse to go to pubs five nights in a row The meetings are as follows August 29 – Birmingham August 30 – Manchester, August 31 – Carlisle September 1 – Edinburgh, September 2 – Aberdeen



New boozer group

Cut-price add-ons for the Telestrat

WE SOFTWARE which recently announced that it was importing the Eureka Informatique/Oric Telestrat into this country, intends to offer discounts on Oric hardware for approximately the next two months

The Eureka/Oric 3 inch disc drive with bundled Sedoric double density Dos is reduced from £269 65 to £238 65 Oric V23 modem with interface and Prestel software is down from £64 95 to £49 95 while the Cosmos printer is reduced from £309 95 to £269 95 and the programmable joystick interface is reduced from £37 55 to £32 55

All offers are subject to availability of the relevant items of stock

Oric which was founded in the UK at the height of the consumer micro boom was sold to the French company Eureka Informatique over a year ago

The Telestrat is the fruit of Eureka s development work on the Oric, Atmos, and is an Atmos-compatible machine that leans heavily on comms

Details from WE Software, Foley Bank, Worcester Road, Great Malvern Worcestershire WR14 4QW (06845-69059)

Commodore's show shuffle

CONFUSION reigned last week over Commodore's presence at this year's PCW Show, with the micro manufacturer's PR company at first unsure, then steadfastly maintaining that Commodore would not be attending then changing its mind again. Commodore itself however said that it would be attending, and the company does actually have a stand at the show booked.

It however appears that the stand will be relatively small, and as at the recent PC User Show will concentrate on business with the Amiga and Commodore's PC compatibles on display. The company should also launch the 64C onto the UK market there, but may be worried about being overshadowed by Atari. The latter has booked large quantities of space at the show, and is thought to be planning a major blitz.

A 'show/no-show' attitude is becoming something of a tradition at Commodore. The company did finally turn up to the CES show in Chicago this Spring but only after a bout of semi-public agonising. A spokesman said the company hadn't made a firm decision to turn up to any further shows, but we know what they said about PCW.

The PC2 – a magnum Opus.

Opus to launch PC compatible

OPUS is climbing onto the PC bandwagon with the Turbo range, due for launch at the *PCW* show and starting at £575 (including VAT). The machines have a clock speed switchable between 4.77Mhz, the IBM PC's speed, and therefore the one that produces the highest level of compatibility, and 8Mhz. The base model comes with a single 360K floppy drive, 256K Ram, Hercules-compatible graphics card and monochrome monitor.

Other standard features are parallel printer port, eight expansion slots, battery backed clock calendar, keyboard lock and joystick port. The machines can be expanded to house one megabyte on the motherboard and will initially come in four different configurations.

In the home field Opus is more generally known for its add-on disc drives for the likes of the Spectrum but its appearance in the PC market shortly after Spectrum Group's entry, with the Bondwell, indicates that Amstrad's PC will face stiff competition from several microcomputer companies on its eventual launch.

New-look Einstein micro gets an enlarged brain

TATUNG's follow-up to the Einstein, the Einstein 256, is to be launched at the *PCW* show in September. As predicted in *Popular Computing Weekly* it is to be an Amstrad-style design, running CP/M and including a single 3 inch disc drive.

Tatung claims the machine is completely compatible with earlier versions of the Einstein and in addition has stereo sound, video, mouse, tape and light pen inputs and twin joysticks ports. It also has 512 colours, resolution of 512 × 424 and will support multi-coloured sprites.

Tatung won't reveal the price apart from saying it will retail at the lower end of the price scale.



Carry on screening

Memotech's multiple monitor

FRESH from its rescue Memotech Computers is launching a video wall control system that will allow conferences, discos and exhibitions to assemble pictures made up of anything up to 100 monitors. The device, the Distributed Digital FrameStore is based on a Memotech computer and as it's designed to emulate a Centronics printer is programmable in MTX Basic. A 4×4 wall controller comes in at £6 000 while the one above is a few dollars more.

Price scoop from Proops

ELECTRONICS discount warehouse Proops has a bargain for people who want a cheap introduction to micros. The company has obtained 90 Dragon 32s, 30 of which work with the remainder suffering from what a spokesman called 'minor faults'. The working models are to be sold on a first come first served basis to personal callers only for £23, while the defective models, which are all minus power packs and the top of the case (but see page four for Dragon power supply details) are being knocked down for £15.

Most of the machines come with manuals, although as spares and support for the Dragon are thin on the ground this is about all you're liable to get.

Details from Proops Distribution, Heybridge Estate, Castle Road, London NW1 (01-267 6911).

Micro museum at show

LEVEL 9 is to celebrate its fifth birthday at the PCW Show by dressing its stand up 'in the form of a museum.' The company also intends to show how hardware has improved over the past five years by staging a 'computer battle' between the Nascom computer (circa 1981) and the Amiga (1986).

The Amiga should win, unless of course two rival champions are to bludgeon one another to death with them.

Product News

Commodore sells suite for Amiga

COMMODORE is releasing *Logistix*, an integrated business package developed for the Amiga by Gralox. The package adds time management to spreadsheet databases and graphics functions and provides project planning models critical path analysis support and computerised wall planning

The package can also read in files from *1-2-3 Supercalc and dBase* and has been reconfigured to take advantage of the Amiga's multitasking and graphics capabilities It costs £282

Elephant now wears ribbons

DENNISON has extended its range of Elephant Memory Systems computer ribbons with the ER112 ER113 and the ER236 The ER112 fits the Commodore MPS 801, while the ER113 can handle the MPS 803, Brother M1009 and Centronics 3101 printers The ER236 is a multistrike ribbon which can be fitted to the Commodore MPS 802 1526 and 4023 and the Mannesmann-Tally MT-80 The ER112 is £3 75 the ER113 £5 96 and the ER236 £5 10 Our illustration shows the three positioned before an Underwood typewriter a classic circa 1926 but regrettably ill-equipped to handle any of them

Details from Dennison Colonial Way, Watford WD2 4JY (0923-41244)

68000 board from Cumana

CUMANA's new products for the PCW Show will include an OS-9/68000 upgrade board for the BBC B, price £817 60, single and dual 3½ inch drives for the Atari STs (price £159 50 and £269 respectively), and a £79 90 disc interface for the QL

The 68000 board is described as a high performance real time operating system incorporating multi-tasking capabilities and a powerful graphics kernel while the Atari drives have a capacity of 1Mb each The QL interface can support up to four drives in double density mode, and can use 40 or 80 track, single or double sided 3½ inch or 5¼ inch drives It is also compatible with Cumana's range of BBC drives

Details from Cumana The Pines Trading Estate Broad Street Guildford Surrey GU3 3BH (0483 503121)

64 graphics pack is enhanced

CULTON Sales and Services has added a text mode insert facility for its *64 Drawing Board* graphics utility for the Commodore 64/128 The facility allows text from a word processor file to be inserted automatically into a defined area on the drawing sheet The *64 Drawing Board* also allows the use of an unlimited range of fonts from eight by one pixel (handy for morse code faces) to 40 by 24 pixels

Details from Culton Sales and Services, 34 Mount Street, Dorking Surrey RH4 3HX (0306 885138)

Typing tutor for Amstrad PCW

COMPUTER One has launched a new typing tutor for the Amstrad PCW machines It consists of manual, 23 lessons and a Hangman-style learning game It costs £24 95

Details from Computer One Cambridge Science Park Milton Road, Cambridge CB4 4BH (0223 862616)

Manual is a Plus for CP/M

THE *Official CP/M Plus Handbook* is now available from Heinemann, price £25 It's designed for use with the Amstrad CPC 6128 and PCW machines and consists of Digital Research's CP/M Plus documentation

Details from William Heinemann, 10 Upper Grosvenor Street London W1X 9PA (01-493 4141)

Diary Dates

JULY

24-27 July
Acorn User Exhibition
Barbican Centre, London
Details: Hardware software and peripherals for the Electron BBC micro and Master machines.
Trade only 10am-1pm on 24 July
Price: £3 adults, £2 children, £1 discount for advance sales.
Organiser Editionscheme, 01-349 4667

SEPTEMBER

3-7 September
Personal Computer World Show
Olympia, London
Details. Software and hardware for home educational and business computer users. For the first time this year the show is to be organised in three separate halls – business games and education
Price: £2
Organiser Montbuild 01-487 5831

12-14th September
8th Official Commodore Computer Show
UMIST Manchester
Details: A wide range of Commodore hardware, software and peripherals. Formerly the Commodore Horizons show
Price: £3 adults £2 children, £1 discount for advance booking.
Organiser Database Exhibitions, 061-456 8835

26-28 September
Electron and BBC Micro User Show
UMIST Manchester
Details: Software hardware and peripherals for the Electron, BBC micro and Master machines. Produced by Acorn
Price £3 adults £2 children £1 discount for advance booking
Organiser: Database Exhibitions, 061 456 8835

OCTOBER

3-5 October
The Amstrad Computer Show
Novotel London
Details. Home and business software and hardware for the Amstrad range of computers.
Price £3 adults, £2 children, £1 discount for advanced booking
Organiser Database Exhibitions 061 456 8835.

30-31 October
Hampshire Computer Fair
Guildhall Southampton
Details: Business computers and communications
Price: Free entry by business registration
Organiser Testwood Exhibitions, 0703 31557

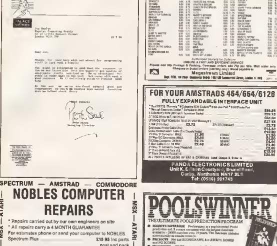
NOVEMBER

7-9 November
Electron and BBC Micro User Show
New Horticultral Hall, Greycoat Street, London SW1
Details Hardware software and peripherals for the Electron BBC micro and Master series
Prices: £3 adults £2 children £1 discount for advanced booking
Organiser Database Exhibitions 061-456 8383

21-23 November
9th Official Commodore Computer Show
Novotel London
Details A wide range of Commodore Hardware, software and peripherals
Prices: £3 adults £2 children £1 discount for advanced booking
Organiser: Database Exhibitions, 061-456 8835

22 November
The 6809 Christmas Show
Royal Horticultural Hall Westminster London
Details Dragon software and peripherals
Price
Organiser Microdeal 0726 6820

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser



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Tel 0276 684959

Star Letter

QL printer help

With reference to the article on using a Brother EP44 as a line printer to a Sinclair QL in *Popular* May 1, I would like to offer the following *Install – bas* edition

Printer to be Installed – Brother HR15
Port – Ser 1
Baud Rate – 1200
Parity – None
Lines/Page – 66
Chrs/line – 80
Cont forms – No
End of line code – *CR LF*
Preamble code – *Esc,CR*
Bold on – *Esc W*
Underline on – *Esc E*
Subscript on – *Esc U*
Superscript on – *Esc U*
Postamble code – None
Bold off – *Esc &*
Underline off – *Esc R*
Subscript off – *Esc,D*
Superscript off – *Esc D*

The EP44 should be set up as follows

Baud – 1200
New line – *CR + LF*
Bit length – 8
Code – *7/W*
Parity – *N*
ER – *IY*

Using this printer driver gives both sub and super scripts and when underlining saves a lot of ribbon as the

continued on page 10▶

Short-sighted

I have just read Mike Lloyd's Ziggurat in *Popular* July 17 and must conclude that he is short-sighted and confused.

He says that there are two paths that computer manufacturers can take – improved Basic machines about which more later and secondly 'clean' machines with no resident language software

This second type of machine will probably dominate in the future with the Amiga and Atari STs leading the way. This type of machine has already been around for a long time (RMZ3802 for example) and is the best solution for getting away from language specific machines

His other suggestion, though that Basics be improved is rather disturbing. Most people buy computers to learn about computing (although the vast majority end up playing games and why not? After all that's what they're best at), but they will learn little from Basic however 'structured' it may be

Their ultimate goal may be to work in the computer industry but very few employers take on people purely as Basic programmers

If you want structure and speed, why not try Pascal? Then move on to Ada or Cobol, both of which are easy to pick up after Pascal. The language would of course be non-resident and held on some form of backing store

The part of his article I objected to most was the suggestion that Basic be used to produce *Manic Miner* type games. Who wants those? If it can't produce games like, say *Impossible Mission* what use is it? The more sophisticated the end-result the better. In the next few years someone will produce the ultimate games designing tool and languages will become redundant for writing games. Until then Mr Lloyd, leave it to freaks like Tony Crowther David Crane et al who seem fairly happy using machine code

Simon J Mills
London SW12

What happened to vector graphics?

Every now and then it's interesting to sit back and think about some of those wonderful computer ideas that never quite made it. Light pens are a particularly good example they sound like a lovely idea but only seem to work well with elaborate hardware far beyond the reach of most home users. A related concept is vector graphics an alternative display idea that once seemed to offer a lot but is still almost exclusively the province of amusement arcades and professional design departments

Vector graphics produce the type of displays used in *Battlezone Asteroids*, and many other wire-frame graphics arcade games. Essentially the entire display is produced by a single beam of electrons which traces the outlines of objects fifty or so times a second. Since the beam only has to move to cover essential details, the circuitry of these displays can be considerably simpler than a monitor or TV set and games can be unusually fast

By comparison a normal monitor or TV set uses Raster graphics, electron beams scan the entire surface of the display tube repeatedly, even in areas where nothing is happening. Where a normal monitor display is broken up into pixels a vector line is completely smooth regardless of angle, and is as thin as the beam of electrons that produces it

Essentially, the difference between a normal monitor and a vector display is similar to the difference between a dot matrix printer and a plotter a dot matrix printer tries to draw a line as a series of blobs which may not fit precisely a plotter will draw a straight line. For most vector displays a line is simply defined by its end points with the beam tracing the distance between them, a curve is drawn as a series of short straight lines linking coordinates, the smoothness depending on the number of linked dots

Because it's easier to draw straight lines than curves on a vector display most arcade games tend to feature fairly angular displays however, with more computer power and better software near-perfect circles and curves are attainable

Apart from arcade games the main use of vector graphics is in computer aided design (CAD) work. Vector displays make accurate scaling of lines easy, and are well-suited for diagrams

The main disadvantage of vector graphics is that displays are usually limited to a single colour. Attempts to get round this (by having a colour screen and several electron beams) tend to be complicated and somewhat less clear than a single-colour tube. There have also been a few hybrid vector-raster displays these are usually extremely expensive

So far there's only been one attempt to introduce vector graphics to the home market. An American company introduced the Vectex home computer in 1983 essentially it was a dedicated vector graphics game machine, consisting of a monitor and simple player controls which took plug-in game cartridges. The most interesting feature of this machine was its small vertical screen roughly the size and shape of an A4 sheet of paper. The Vectex was fast and many of its games were novel but, since then there have been no readily affordable vector displays the cheapest I've seen is an IBM compatible add-on costing well over £1000 which needed a special interface card and ran one CAD software package

Obviously vector displays have their problems, and the main one is probably the lack of a standard. For monitors there are four or five main types of interface with RGB and composite video most common but for vector graphics each manufacturer seems to use a new specification

If manufacturers could agree a standard and persuade more computer and software companies to take an interest in the idea we might see vector displays dropping down to home user prices. At first most of the software would probably be for CAD but in the long run a new type of display might spark hundreds of fresh programs from games to entirely new applications that can't readily be imagined.

Marcus Rowland

Letters

underlining is done on the same strike as the letter. This could probably be bettered. I stopped when I got this far as I was too exhausted to continue.

Does anyone know if it is possible to use the printer memory as a printer buffer or of any way to bypass the character set to print graphics?

May I also offer the following small hints. To stop the printing of the page number at the end of a short letter simply set the page length to zero. The QL character set looks particularly good on manuscript size paper, and it is useful to set up letter-headings for different sizes of paper with margins and tabs and save them to a spare drive.

Many thanks for your support of the QL. Long may it last.

Alastair Smith
Edinburgh

Dir edit helpful

I am writing to congratulate yourselves and Alastair Scott for one of the most useful programs I have ever found in a magazine. I refer to the program *Dir Edit*, published in *Popular* July 17.

Since typing in the program, I have edited my collection of discs and found some programs I thought I'd lost forever. Many thanks for the means of recovering them.

I must confess however, that there was one small matter which disappointed me and that was the absence of the standard full stop between the file name and its suffix (as in *Progfile.Bas*). I have therefore modified my copy of the program as follows to support this feature.

The following lines should be added or amended.

```
570 ga$(s)=file$(s) gb$(s)=
LEFT$(ga$(s),8)+"."+
RIGHT$(ga$(s),3)
576 PRINT gb$(s) TAB(16)
930 ERASE file$ user rw sys, er le
ga$ gb$
940 DIM file$(16) user(16) rw(16)
er(16) le(16) ga$(16) gb$(16)
```

This one program has made worthwhile the purchase of your magazine which I have done since I bought my Amstrad 6128 last year. Thanks again.

G J Kent
Colchester
Essex

Call all Orics

I am writing to ask you through your Letters page if there is an Oric users group in Britain.

I have been given an Oric Atmos 48K computer keyboard but I need a 9V Oric transformer that changes 240V to 9V. I wish to know how much a new or second hand one would cost if it is possible to get them, or if any other 9V transformer would fit.

I J Mackie
10 Beaufort Street
Chaddesden Est
Derby
DE2 6AX

Magazine madness

I wonder if you can help me? My predicament is last Christmas I sent in two articles relating to my computer to the main user group magazine for my machine. It eventually published them over the last few months. Since I sent them in I have moved address but I have forwarded the group my new address and checked my old address for mail. It credited me with writing both pieces.

I have written a number of times enquiring whether I would be getting some compensation for my troubles. As yet I have had no correspondence whatsoever. I sent them into the magazine because it was looking for articles and I thought I would get paid for them. Since the magazine is copyrighted I cannot try and resell my material. What can I do? I feel as if some has taken advantage of me.

Note I haven't included the name of the user group as I am hoping it will come through and save the day for me.

A F Wilson
4 The Flat
Tangiers St
Whitehaven
Cumbria

Did the magazine state that it would pay you for the articles? Most user groups are voluntary organisations, run by people in their spare time, and they simply don't have the cash to pay for submissions.

On the other hand, however, as you have not been paid, you retain the copyright (ie, the magazine hasn't 'bought' the copyright from you) and are free to resubmit the articles to other publications.





We're hoping to catching the Christmas market.

Puzzle

Puzzle No 218

"Here is a little problem for you," said Professor Otto Hex to his final year students.

Picking up a piece of chalk he wrote the following words on the blackboard.

SQUARE
PRIME

"Now what I want you to do," continued the Professor, "is to substitute the digits 1 to 9 for the letters in those words so that SQUARE is square and PRIME is prime.

"Remember," he continued, "that the R must represent the same digit in both numbers as must the 'E'. And don't forget that you must not use a zero.

"And there's one more thing I must tell you before you can solve the problem. The letter P is represented by the digit..."

Unfortunately I didn't quite catch what he said. Can you find the solutions?

Solution to Puzzle 214

Answer: $\sqrt{268861609} = 16397$

We are looking for a square number containing nine digits in which the third and fourth digits are alike, as also are the second, fifth and seventh. The rest of the digits are different. Such a number must be the square of a value in the range 10000 to 31622 and so the program tests these values. The square is converted to a string variable for the appropriate comparisons to be made (lines 40 to 100).

Those values which satisfy the conditions are printed out. Of these values we need to select the one in which the letters in the name correspond with the letters in the name of the computer. That is, the first letter is a 'D', the second an 'O' and the fourth an 'E'.

Only the answer given will do this.

```
10 FOR N=10000 TO 31622
20 S=N*N
30 S$=STR$(S)
40 IF MID$(S$,2,1)<>MID$(S$,5,1)OR MID$(S$,2,1)<>MID$(S$,7,1)THEN 200
50 IF MID$(S$,3,1)<>MID$(S$,4,1)THEN 200
60 IF MID$(S$,1,1)=MID$(S$,2,1)OR MID$(S$,1,1)=MID$(S$,3,1)OR MID$(S$,1,1)=M
ID$(S$,6,1)OR MID$(S$,1,1)=MID$(S$,8,1)OR MID$(S$,1,1)=MID$(S$,9,1) THEN 200
70 IF MID$(S$,2,1)=MID$(S$,3,1)OR MID$(S$,2,1)=MID$(S$,6,1)OR MID$(S$,2,1)=M
ID$(S$,8,1)OR MID$(S$,2,1)=MID$(S$,9,1)THEN 200
80 IF MID$(S$,3,1)=MID$(S$,6,1)OR MID$(S$,3,1)=MID$(S$,8,1)OR MID$(S$,3,1)=M
ID$(S$,9,1)THEN 200
90 IF MID$(S$,6,1)=MID$(S$,8,1)OR MID$(S$,6,1)=MID$(S$,9,1)THEN 200
100 IF MID$(S$,8,1)=MID$(S$,9,1)THEN 200
110 PRINT N,S
200 NEXT N
```

Winner of Puzzle No 214

The winner this week is Dean Bubley, of Golders Green, who will be receiving £10.

Rules

The closing date for puzzle 218 is August 26.

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The InterGem interface will save you money

But, as John Lettice discovered, it may take some time

Once upon a time practically all real microcomputers used $5\frac{1}{4}$ inch disc drives, and practically all real microcomputer users deplored the fact Your $5\frac{1}{4}$ inch disc, they said was floppy (hence the name), large and susceptible to damage The smart money was on disc standards changing over to 3 or $3\frac{1}{2}$ inch, both of which were sturdier and had the added advantage of being able to fit into a shirt pocket

Those of us who being minus shirt pockets, concluded that the future belonged to people clad in safari suits, and began stockpiling $5\frac{1}{4}$ inch discs, can now breathe again Amstrad discs are currently so hugely expensive that it could make sense to fit a $5\frac{1}{4}$ inch drive to your PCW and instead of spending £4 for a 3 inch disc you could spend £1 for a $5\frac{1}{4}$ inch disc. It's cheaper in the long run and while it's arguably not cheaper in the short run it's also cheaper in the medium run

> *"InterGem is basically a small piece of circuitry"*

Bearing in mind the inexplicable failure of the all-powerful Amstrad to bring down the price of its discs to the level everybody else's discs sell at it was clearly only a matter of time before someone took steps to attach the Amstrad PCW to those ridiculous vulnerable antiquated and cheap $5\frac{1}{4}$ inch drives

Demini's InterGem Interface is an attempt to do this, and takes the tried and tested path of twiddling the PCW's electronics around to the extent that it will accept BBC standard $5\frac{1}{4}$ inch drives

InterGem is basically a small piece of circuitry designed to fit into the spare drive slot of the PCW 8256 It could be fitted to an 8512, but as it fits into the area occupied by the second drive this would be an expensive way of using it

It comes in the form of a small circuit board designed to fit into the second drive slot with the interface socket projecting out where the drive would normally be Gemini recommends that it be fitted by an engineer, but the procedure is fairly straightforward and it's therefore feasible to fit it provided you're fairly DIY minded

Following the installations manual, the first step is to take the back off the PCW Once you've done this you need to cut through the six small plastic lugs holding the second drive cover in place, leaving a slot for the interface A small hacksaw blade seems best for this job With the slot expoced the next step is to slide the interface into position from the front then secure it. Doing the latter involves twiddling with screws and fixing plates and requires something like six pairs of hands and a team of *Fantastic Voyage* style pixies – tricky, but it can be done

Once you've got this far you realise your

> *"It will operete like a PCW second drive"*

mistake as the manual tells you to fix the cables from the inside of the PCW to the interface and of course now the interface is fixed you can't see where the cables go But after dismantling the whole shebang, cursing Gemini and attaching the cables your creation should be complete

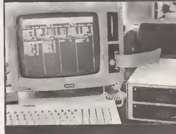
The completed edifice looks pretty much like a PCW, apart from the strange sockets emanating from the second drive slot This consists of a connector for the ribbon cable leading to the drive and a power output capable of taking a plug for a standard BBC drive The unit can cope either with this or with a BBC style drive with external power supply (the type used in this test) The interface can also deal with both 40 and 80 track BBC drives, although 40 track drives cannot be used with *Locoscript* or 80 track disc formats

Once it's up and running it will operate just like a PCW second drive, but has the added frill of allowing you to transfer data between MSDOS (IBM PC), Concurrent CP/M CP/M CP/M 86 and BBC machines and the PCW The utility disc included with the interface includes an impressive list of machines catered for including obscurities like the Lynx Einstein DEC Rainbow and ICL machines too bizarre to mention Obviously it wasn't possible to test this range but those that won't work straight off should go with a little tweaking

InterGem should also be able to deal with $5\frac{1}{4}$ inch CP/M programs straight off drive B, widening the PCW's software base to the less popular CP/M packages (which are only available on $5\frac{1}{4}$ inch disc) and to public domain software

Overall the interface and the disc drive to go with it is a substantial investment but assuming the price of 3 inch discs isn't going to drop in the near future (have you ever detected a kindly smile on Alan Sugar's face?) it should in the long run prove to be a money saver Well worth thinking about

Product *InterGem Interface* **Micro** Amstrad PCW **Price** £99 95 **Supplier** Gemini Marketing Unit 21 Concorde Road, Dienen Way Trading Estate, Exmouth, Devon EX8 4RS (0395 265165)



Amstrad Exbasic is too roundabout

It goes without saying that although the Amstrad PCW machines have been sold as dedicated word processors, they are capable of far more

Which makes it rather sad that Amstrad chose to bundle Mallard Basic with the machines It's not that Mallard Basic is bad but that it seems to have been designed to do no more than calculate compound interest and other piddling little business programs

There are no graphics commands, and various control functions are implemented through torturous *Escape* sequencies

A partial remedy has now arrived from a new software company called Nabitchi – not Japanese as you may assume but based in Liverpool

Nabitchi's Exbasic adds 36 new commands to Mallard Basic covering areas like graphics, cursor control, screen layout and so on

Some of these are completely new to the Mallard dialect such as circle, line, paper and ink commands Others replace the escape sequences For example instead of *Print Chr$(27) 'E'* to clear the screen, you can use *Print '!Cls'*

The new commands are all preceded by the inverted exclamation mark (*Extra-1* on the PCW keyboard) and concluded with the full stop

Unfortunately this makes typing them at the keyboard a finger-twisting business Furthermore, the new commands are all *Printed* So to draw a circle in the centre of the screen with radius 50 pixels requires a line like

```
10 PRINT  ¡CIRCLE  360 125 50
```

You can of course define the new commands as strings (*C$= ¡Circle* ') and use them that way but this requires a fairly lengthy definition routine

The other drawback is that patching the commands into Mallard Basic has made them extremely slow Because of this Exbasic is totally inadequate for really detailed graphics or for animation

Whether you'll want exbasic depends on how much programming you need to do If you need a few basic graphics like bar and line charts then Exbasic is probably adequate

Serious programmers will do better with Digital Research's compiled CBasic or another language altogether or get to grips with programming the GSX graphics system

Peter Worlock

Program *Exbasic* **Micro** Amstrad PCW 8256/8512 **Price** £11 44 **Supplier** Nabitchi, Merseyside Innovation Centre, 131 Mount Pleasant, Liverpool L3 5TF

Power cartridge for the Commodore 64

KCS's *Power Cartridge* joins a long list of utility/operating system enhancements for the Commodore 64 Though a powerful machine, the 64 benefits hugely from added commands for disc handling basic programming printer control and so on and the Robtek *Turbo* range, H&P *Final Cartridge* and products from Evesham Micros have all attempted to remedy various aspects of the 64's shortcomings The *Power Cartridge* includes most of the features found on these existing products

The cartridge features five main areas of use The first a Basic programming toolkit, is the one which will probably be most useful Extra commands provided include automatic line numbering, colour setting for border, background and text, *Deek* (double byte peek), block line delete variable dump text string find, disc catalog printout hex-dec convert function key commands Basic merge, pause list print trace and so on

get it to work with either the audio or RF output of the 64 Minus one point

The third major feature is the monitor, *Powermon*, which can be called from Basic, by pressing a function key or from the reset menu (of which more later) *Powermon* occupies its own special memory space in the cartridge so it will not interfere with any resident program It also allows you to use

centronics printers connected to the user port

> *"On price, the power cartridge is a fair deal"*

> *"Tha power cartridga includes fast disc loadng – an increase of five to eight times"*

The power package

In all cases the command syntax is straightforward The next major area of use is disc handling The *Power Cartridge* includes fast disc loading, claiming a speed increase of five to eight times with normal programs directory display without disturbing the program in memory, and routines to initialise, change device number, disc format change file names, reset the disc drive and validate discs without all the normal cumbersome Commodore DOS commands there are also fast load, save verify, merge and audio commands This last is supposed to put the signal from the cassette out to the TV speaker but I could not

Rom from under the Basic and kernal Rom which is not usually accessible *Powermon* includes a full set of commands to assemble disassemble fill hunt, jump print display registers transfer memory areas and so on

The next area of use is the printer command section, which allows you to make hard copies of the screen (with a suitable printer operating in graphics mode) in large small reverse or normal print Note that this function will not print sprites, but then neither will any of the other comparable cartridges on the market *The Power Cartridge* also includes various commands for using

The last feature is the reset page Pressing the reset button on the cartridge brings up a menu from which you can select one of a number of options *Continue* simply returns you to where you left off; *Basic* returns you to Basic, retaining all variables, *Reset* returns you to the standard start display and clears the memory *Hardcopy* produces print-outs and *Monitor* speaks for itself Overall the *Power Cartridge* is most closely comparable to H&P's *Final Cartridge*

On price alone the *Power Cartridge* is a fair deal, but in terms of general specifications it offers little which has not been available before

Chris Jenkins

Product *The Power Cartridge* **Micro** Commodore 64 **Price** £39 95 **Supplier** Magnam Products Highlands Spencer Wood Reading Berks RG7 1AH 0734 883183

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The imaginative Image System

Christina Erskine draws out the newest art package



Graphice and art packagee are storming into the *Popular* office at the moment – the latest being CRL's *Image System* for the Amstrad CPC machines

Art programs are fast becoming standardised No longer is it enough to give the facility to draw lines, fill them in

> *"All 28 colours on the Amstrad can be used, 16 at any time"*

various colours and dump the result to a printer but circle routines rotation zoom, texture variety airbrushes, and the ability for the program to operate with joysticks, mice, light pens etc are all considered hallmarks of the quality art program

The *Image System* has some but not all of these Firstly it operates solely from the keyboard There are worse keyboards to use with a graphics package than the Amstrad's but it is still unwieldy

For example to draw your line, you use the cursor keys plus *Shift* A variety of keyboard controls then enable you to draw circles, change colour the colour palette options, textures and so on

All 28 colours on the Amstrad can be used, 16 at any one time The first 16 colours are set out at the bottom of the drawing screen, and accessed – this gets tricky – sometimes by numbers 1-8 or *Shift* 1-8 and sometimes by the cursor keys according to what mode you are in

The extra 12 colours can be accessed separately using their code numbers (consult either instruction booklet or Amstrad manual or the top of your 6128 disc drive). If you want to colour anything brown or pink (flesh tones, for example), you ll need to go through this rather cumbersome process fairly soon, since the 'base' colour screen is heavily weighted in favour of green yellow and blue

The main drawing aids in the program are circles, fills and straight lines from point to point

A circle is created by defining the extreme points of its diameter a line – most useful for diagonals – by setting its extremities and fills by cursor positioning and *Shift/Copy* The fills are pleasingly quick, while the circles are at their best when large Small circles look disconcertingly squashed

> *"The basic freehand drawing mode is fairly simple to use"*

The basic freehand drawing mode is fairly simple to use, but inevitably slow and finicky and thus difficult to use well

If your line overshoots or goes off-course then to delete a small part you must change your drawing colour to that of the background and go over the exact lines of the mistake It must now be apparent that this is not a program for the uncoordinated

Indeed in the accompanying booklet CRL suggests that if you have a definite picture in mind to try it out freehand first with felt pen and acetate film which you can then position over the screen and 'trace' with the Image System To me this rather negates the idea of computer art packages making drawing easier for the hopelessly inartistic

Having created a picture it can be saved and modified It can be rotated, moved around the screen, and scaled up or down in size The finished image can of course be dumped to a printer

As an arts package the *Image System* is far less sophisticated than many on the market, and on the Amstrad hits some very stiff competition from the recently converted *Melbourne Draw* However it has most of the facilities expected of programs of this type its main drawback being the limitations of using the keyboard only

Above and below. examples of the creative heights reached with The Image System

Program *The Image System* **Micro** Amstrad CPC 464 664 6128 **Price** £19 95 cassette, £24 95 disc **Supplier** CRL, 9 Kings Yard Carpenters Road, London E15

Fame and fortune – or too much work?

David C Ridge charts some of the main concerns involved in setting up and running a software house in the first of a two-part series

I should first of all point out that my own company Novelsoft is not what one would label a "successful" company by most definitions of the word due mainly (I hope) to the very short time we've been in existence (less than one year). However, as head of marketing and administration I have learned a great deal about what to do, what not to do and why.

I don't claim to know the usual motivations for starting a software house but someone once said, "When frustration overcomes fear a person will take action." This was certainly the case where we were concerned. Our reasoning was unoriginal but sound – we didn't mind working hard but why should we make someone *else* rich doing it?

The chain of events which led to this line of reasoning was equally unoriginal. In fact they read like a bad Hollywood script.

Scene 1 – Programmer writes program
Scene 2 – Programmer signs contract with company which promises the world
Scene 3 – Programmer and company begin to develop a unique rapport

Programmer: "When are you guys going to do some advertising?" "And what about some decent packaging?" "And when am I going to see a royalty cheque?" "And when are you going to send the review copies out?"

Company: "Next month ... next month ... next month ... next month."

Scene 4 – Several repeats of scene 3

Too much work

You may have been able to handle things on your own when all you were doing was writing the software but you will find it impossible to carry out the administrative duties too. There are manuals to write and reproduce, packaging to design, advertising copy to get out, programs to duplicate, review copies to mail, orders to fill, not to mention customer support. Try doing all this alone and you'll end up in a nice room with QL keyboards on the walls.

We are a very small firm with one full-time programmer, one full-time person to handle marketing and administration and a few talented volunteers and we still find the amount of work staggering! So unless you've got the necessary start-up capital to hire a small staff (and that's not usually the case) then a partner or two is essential.

There are a host of good reasons for having partners, the most obvious being the extra start-up capital they usually bring with them. But equally, if not more important, is the diversity of talent and ideas. And don't underestimate the value of moral support! Starting a new business is a scary endeavour full of ups and downs (sometimes more downs than ups). Without someone else around to remind you what you're here for, it would be far too easy to pack it all in when things aren't going well.

Dealing with licences

Even though you have your own company you still may find that you must strike a deal with another company or distributor from time to time. To break into markets in countries other than your own, you will probably have to deal with an established distributor in that country. Many smaller companies are now signing deals with larger houses to market and use their distribution channels more effectively for new titles.

I will use the Spectrum market as an example since it is likely to have the broadest audience of potential entrepreneurs. Based on my own experience, research and observations, I have come up with the following figures: a top game is expected to sell 30,000 to 50,000 copies, a top utility or business program about 5,000-7,000 copies, and a new language implementation about 1,500-2,000 copies. These figures are for the UK market alone.

Jeff Minter – now doing licensing deals with third party companies

A 15% royalty of the retail price is an average arrangement with most third party licensors. A typical deal for a good utility program might be something like this: a 15% royalty on retail sales with a guarantee of £3,000-£4,000 over a period of six to 12 months and an up front payment of £1,000-£2,000 against future royalties.

Deciding what sort of software to write for your expectant public is a fairly critical step. The conclusion is not as obvious as the sales figures would seem to indicate. The major consideration is, which *market* are you planning to write for, rather than which category?

The level of sophistication of today's crop of computer games is extremely high. To compete on this level requires a tremendous commitment of time. Add to this the fact that the games market is the most fickle with the shortest market life and you begin to see why you may want to think twice about getting involved with this category.

Even though the projected sales of business programs are many times smaller than those of games, business programs are often the easiest to write from the point of view of programming knowledge and originality of concept. They also have a much longer market life.

The redeeming factor in the languages category is that although these products sell in relatively low quantities, they almost always command the highest price – typically two to three times that of the average game. And these products have the longest market life.

Financial reward aside, what you choose to write will usually be determined by the type of products and machines that you, your partners or your programmers already have experience with.

I have studied how software houses become successful (a rare occurrence indeed) and how programmers get rich (an even more rare occurrence) and have come to this conclusion: contrary to popular belief, a programmer does not get rich by writing lots of programs. In almost every case I studied, the recipe was the same – write one excellent state-of-the-art program, refine it over a period of time *and rewrite it for many different machines* (Kevin Toms with *Football Manager* and Matthew Smith with *Manic Miner/Jet Set Willy*, being obvious examples).

You see, what most amateur programmers don't really understand is that over half the work involved in creating a new program is in designing the specifications, ie, what it will do, how it will look, how it will work, how it will 'feel' to the user, how the different parts interact and interface with each other.

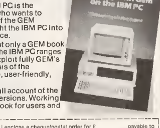
This part of the work remains essentially the same during the rewrite for other machines. When you elect to rewrite, you already have the idea perfected, the design groundwork laid and the buying public will be familiar with the package through other machines. In some cases you can even use the same manual and advertisements. Starting from scratch would take two to three times longer.

I hear you saying to yourself: if that's all there is to it then why aren't all programmers rich? Because it's a rare programmer indeed who is a virtuoso of more than one or two different machines.

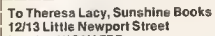
Next week: Marketing the product and choosing a machine

David C Ridge is a senior partner with Novelsoft, a software company based in Toronto, Canada

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Getting trapped by the Trap

Trap is the latest offering from the mighty assembler of Tony Crowther now back on for efter a recent thin patch

He says he can t stop playing *Trap*, but he can be forgiven this immodesty Addictive it is

It s a shoot em up of the old school, enhanced by some tasty 3D graphics, and the action is fast and certainly furious

You begin on final approach to a planet avoiding and shooting space mines on arrival the locals come out to greet you with lasers bombs missiles and sundry other forms of destruction to which you must respond in kind

You then enter e valley where you must bomb a certain number of ships in the river knock out laser turrets, blind the spying eyes or face a fleet of security ships, and pick up cargo and fuel Dropping cargo to the waving refugees will gain you extra lives

At the head of the valley you leave the ship and set out on foot knocking out various robots on the way to collect an orb These orbs are crucial as they allow you to upgrade your space ship for more powerful models

If you succeed, it's back to the start for another run – against more faster, more difficult adversaries

It sounds like the same old story and it is But it s well done with superb sound and music great graphics, and well-constructed gameplay If we can t have originality let's have fast and addictive action Tony Crowther delivers

Incidentally at first I thought *Trap* was insanely difficult and almost gave up But stick with it – it can be done and the rewards make it worth persevering

Peter Worlock

Program *Trap* **Micro** Commodore 64/128 **Price** £8 95 (tape & disc) **Supplier** Alligata Software, 1 Orange Street, Sheffield S1 4DW

Cloak of death offers spooky fun

You ve done it now haven t you you really have That door closing shut behind you was the stark reality that you really should have kept your big mouth shut instead of idly boasting in the pub that staying the night in the old house (which has been deserted for 30 years) was easyville

The bet was as good as won before you even set foot inside you thought Well you thought. Well, you thought wrong, very wrong, because there s evil afoot in that old spooky hose and now you're going to have to just get on with the job of saving your skin instead of jumping out of it!

David Cockram has constructed a mean adventure here, with plenty of puzzles to keep any seasoned adventurer well satisfied I would say he s 'borrowed' his style from the Scott Adams series, and this is in evidence right from the start. Whilst exploring the study you come across a desk which in the original description is bare but upon examining it you see the words "I ve found something" And lo and behold I ve found a letter Combine this with verb/noun vocabulary and there you have it – a Scott clone

A tasty story though and one which has its fair share of very lateral problems I liked it a lot.

Popular Appeal ◆◆◆◆

Andy Moss

Program *Cloak of Death* **Micro** Atari XE/XL **Price** £2 99 **Supplier** Supplier Bug Byte, Victory house Leicester Place, London WC2.

Nocturne is awkward but interesting

Quill'd adventures have become commonplace at the budget end of the market It looks as though we might be in for a flood of GAC d games too

The second to reach our office was *Nocturne* (following *The Bearhunter*) in the Alpha-Omega range running on the Amstrad 464 and 664 Incidentally there s no credit given to Incentive s GAC

Getting started was a little difficult, since the documentation is unhelpful, to say the least You awake on board an alien spaceship having been kidnapped by extra-terrestrial zookeepers Your task is to get back to earth

The first location is a featureless cell containing you and a locked door. How to open the door? Well, obviously, you *BASH WALL*. No, the combined brains of Popular couldn t solve that one We had to phone Alpha for help

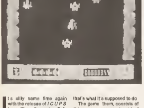
You ll waste a lot of time trying to guess the program's unusual vocabulary but there are more reasonable puzzles to be solved What if anything can be done with the bodies in suspended animation? Will the gorilla prove at all helpful?

On balance Nocturne is a reasonable adventure but with some idiosyncracies that mar the game It s nowhere near the standard of Infocom or Level 9 and even at £4 95 is a little overpriced – £2 99 is nearer the mark

Popular Appeal ◆◆◆

Peter Worlock

Program *Nocturne* **Micro** Amstrad CPC 464/664 **Price** £4 95 **Supplier** Alpha-Omega Software, 9 Kings Yard, Carpenters Road London E15.



A few hiccups found in I.C.U.P.S

It's silly name time again with the release of *ICUPS* from Thor Computer Software Ltd. This stands for the rather pompous sounding agency the International Commission for Universal Problem Solving of which you would be a prospective agent.

In order to join this high and mighty organisation you must successfully complete a computer simulation that tests your abilities to the limit. At least that's what it's supposed to do.

The game, then, consists of flying up a screen devoid of scenery save for a thin strip of meaningless squiggles down either side, blasting away at ordinary looking alien ships. It's not all plain sailing though, thanks to the torpedo (at least that's what they looked like) laying aliens which must be avoided unless you fancy rejection and life on the galactic dole queue.

Your ship banks from side to side, *Uridium* style, as you swerve around said torpedoes, something not very easy at top sped. The answer to that is to slow down from behind. Oh well, you can't everything, although Thor have certainly tried because ICUPS also features the sort of manoeuvering most recently found in *Spy Hunter* where you bludgeon other cars off the road.

Having completed scene one by progressing far enough up the screen, you start scene two which is just the same except for a different coloured border. Exciting stuff what?

Once scene three is finished you move onto part two of the test where you turn from a spaceship into some sort of mutant cockroach.

As the jolly looking cockroach you zap *Jet Pac* style other mutants and go searching for the four parts of a bomb secreted within the confines of the starship in which you have found yourself.

It's hardly gripping stuff but I expect insomniacs everywhere will love it. Not so much a game, more bits of several other shoot 'em up's cobbled together and unfortunately overpriced.

Popular Appeal ◆◆

Duncan Evans

Program *ICUPS* **Micro** C64 **Price** £8.95 **Supplier** Thor Computer Software Ltd, 74 New Oxford Street, London W1

Project Nova: Star Trek revisited (again)

One of the earliest forms of home computer game, *Star Trek* crops up again and again in various forms. This is the first decent version I've seen for the C16, and I must say it was a great deal better than I thought it could possibly be.

The game isn't as complex as it likes to make out, though. There are two basic screens, a view from your battlecruiser including a brilliantly animated starscape and various controls for energy level, ammunition, damage, speed and so on plus the computer control screen, where you select the star quadrant you wish to warp to before engaging your hyperspace drive.

Once you have moved into a sector inhabited by alien ships, it's all action as you track them down with your radar scanner, zap them out of the cosmos and struggle to repair your damaged systems in time after each encounter.

On the first level it's pretty easy to reach the level of "Legendary", just stick the shields on full power, and leap from quadrant to quadrant blasting the fast moving aliens, repairing your damage then leaping again. I completed this level in about ten minutes. Fortunately there are nine levels to complete, and the later ones are faster, harder and much more challenging.

Project Nova has few original ideas, owing a great deal to *Codename MAT* and others, but is an excellent implementation for the C16 and well worth seeking out.

Popular Appeal ◆◆◆◆

Chris Jenkins

Program *Project Nova* **Micro** C16 **Price** £7.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield

Shape Schools Lessons: missing the human touch

Educational software claiming to be for three to six year olds fills me with trepidation: at that age a determined child can do enough damage to a heavy board picture book, let alone a rubber keyed Spectrum.

Peter Grove of Jodan Software is of a similar opinion, going on the notes accompanying his first two releases. They stress that a joystick would be a better method of control than keys whenever possible but, more importantly, a parent should always be to hand to discuss the lessons.

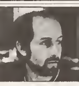
Tape one is concerned with colour and shape recognition while two is about numbers, including addition and subtraction. Each contains exercises on the first side with a game which allows for different difficulty levels, on the reverse.

In a recent interview with Pat Bitton of Mirrorsoft, she stressed the importance of entertainment and reward in educational software. In this respect the programs are very successful. Taking a lesson from Mirrorsoft's *Mister Men*, Grove has created an amusing geometrical cast whose little dance and waves even brought a smile to my cynical lips.

I can imagine a child enjoying the antics of the nicely animated figures and getting to enjoy the games, providing a parent had explained what to do first – but then again, the chip can never replace the human touch.

John Minson

Program *Shape School Lessons 1 & 2* **Micro** Spectrum 48K **Price** £3.99 each, £6.99 for both **Supplier** Jodan's Software, 66 Dingleberry, Olney, Bucks MK46 5ET



Problems solved in Magick and The Pawn

Tony Bridge comes to the rescue of readers in distress

Andie Nixon has been in contact recently, asking for help in Talent's adventure, *Zkul* and Sinclair/Magnetic Scrolls QL version of *The Pawn* I particularly liked *Zkul* when it first appeared it was the first (I think) adventure to appear on the QL and it was a very traditional story of caves, trolls and treasure and devious puzzles Andie writes

"Dear Tony what are the tongs for when and where do I blow the horn, what is the booby-trap for and how do I reach the Medusa? Oh and what is the 'Cossat for?" If you have lots of back issues, Andy then look at Volume 4, Number 17, where you'll find some help for early problems including the dwarves and the rope – and Vol 4 No 21 for help on the 'cossat problem (and if you don't have these issues, then *Popular*'s subscription department will gladly send them on to you)

Unfortunately there's not a lot I can help you with here (the dreaded *Bad Medium* struck again!) In a narrow passage not far from the deep pit, you'll find a mirror and this should give you an idea of how to deal with the Medusa

Cossat is one of those lovely words that crop up in adventures from time to time (and there's another one in *Zkul* – Toobee experiment by typing in the word, or reverse it.

In fact, you'll need to do both here – type *Tassoc* to escape from the room Once you have the cossat, you can leave it at a location and by typing *Cossat* you will be instantly transported to that location from wherever you are Toobee can be used in a similar way, but this time you will be transported to the hut where you can drop your accumulated treasure – *Toobee* again takes you back to the room under the cave, ready for more

The Pawn has been very well received in just about every quarter True, the graphics and general operating environment of the Atari St version are extremely well-done, not only can the graphics be pulled down as required, but they can be pulled down like a shutter, over as much of the screen as required. This facility, together with the use of the mouse in manipulating the program, is rather dazzling and naturally most reports have focused on this along with the merits of the much-vaunted parser

There are ways round this of course, *Ramsave* is a faster version of *Save*, but they accomplish the same thing – and the *Oops* command from Infocom, and more lately level 9 allows recall and thus re-editing of a previous command But I feel happier banging away with the usual verb/noun combination even though it may take several inputs to achieve what one command can with a more complex parser

Now to *The Pawn* the first thing that happens in the story is that Kronos gives you a note – what to do with it? Well after collecting the chest, you must make your way east to the garden where you will pick up some tools from the shed Now go to the guards who stand at the gateway to the palace and give them the note Eventually, an adventurer will turn up riding on a horse with no legs – give him the chest and what happens!

A little later you'll come across an immovable boulder (aren't they always?) and it is now that the hoe the rake and your shirt come in handy Simply tie the rake and the hoe together with the shirt and *voila*! a lever for the boulder This will allow you to get snow to fill the guru's bowl upon which colours appear in the forest If you mix the three colours, you'll get a nice white light which comes in handy elsewhere

Go back to the climbable tree, and open the door (you'll have found the wooden key in the shed), now close the door and move the planks whereupon a way down becomes apparent North of the white room you'll find the office and it is here that you must search for a well-hidden safe containing some important papers Further west is the lounge here you'll find a coin cunningly concealed, as well as a hard hat which must, of course be worn at the appropriate moment The lift, northwards from the lounge, is worth exploring and one of the tools from the humble garden shed comes in handy at this point

As in so many adventures, there is an incarcerated princess waiting to be rescued The key to achieving this will be found by stopping the lava flow in the caverns – simply break or push the wall in the riverside chamber The rest should be fairly straightforward

From a traditional text adventure to a not-so-traditional graphic adventure, Gargoyle's *Heavy on the Magick* Barbara Winterton is a teacher and together with a group of her pupils has solved many games – but their favourites are the Gargoyle adventures *Magick* in particular

Some time ago (in vol 5 no 23) Andrew Hey gave us some hints for *Magick* and declared himself stuck at what he thought was the final exit Barbara informs me quite rightly that it is in fact the *second* exit (on level two in the eye of Heaven) This is the door with the clue "An eye for an eye to enter Paradise" and Barbara hints that the answer lies in a bit of resurrection She and her pupils are willing to give first-hand advice on *Magick* the other Gargoyles and many other adventures

Write to 24 Sandringham Road, Wetherby, West Yorkshire LS22 4PG (enclosing an SSAE if you would like a reply) or call her on 0937 65841

Brian Cheadle and his friend Paul Atkinson were kind enough to send me large maps of the dungeon in *Heavy on the Magick*, along with several pages of information about using objects battling monsters passwords and son on – thanks for the invaluable information Brian and Pual might wish to pass along some of this to you, though possibly in a condensed form Write (with the usual SSAE) to 91 Cavendish Road Hazel Grove Stockport

Darren Stanley of Worthing is one Axil who might benefit from some help, although he has divulged some very interesting (and hard-won I'm sure) facts about the game

But he still has several unresolved problems the sign to the west of the first location Darren is a form of a well known ancient coding device In Quadra Porta (on level two) is a door with a clue, "The Great Sign I in Free" – I'll leave you to connect the two and decide what to do!

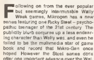
The star signs in the key rooms aren't there by coincidence, as you might imagine, cast your mind back to Gargoyle's other games and the word-play that the authors indulge in You won't be surprised to hear that there are similar puns here too

As an example the nickel key beneath the Leo sign in the Gothic complex will open a door in the deepest part of the dungeon – in the room of pride (lion=price!) Although some of the connections are a little obscure, most are fairly obvious

The disc version for the Amstrad makes for a very much more enjoyable game in my opinion as having Axils and games is speedy and very convenient.

Beginners' guide to using game pokes

Tony Kendle offers some guidence for novices trying to enter game pokes



Following on from the ever popular but seemingly interminable Wally Week games, Mikrogen has a new series featuring one Ricky Steel – psychopathic teenager of the 21st century The publicity blurb conjurse up a less endearing character than Wally was and even he failed to be the multimedia star of game book and record that Mikro-Gen once hoped However the Steel series does offer one important advance over the Wally games in that we have been given a promise that every new release will be innovative and different in style rather than sticking to an fairly rigid format

The first Steel game was actually announced at the same time as the excellent *Equinox* and for the same machines, Spectrum and Amstrad, but was later in appearing The more I play *Equinox* the better I think it is – one of those rare successful blends of strategy skill and furious blasting *Stainless Steel* isn t quite as good but it has some exceptional graphics Smooth scrolling on the Spectrum has been redefined since Elite brought out *Commando* but it is still rare on the Amstrads because of the relatively large amount of screen Ram to access and *Stainless Steel* is very good indeed

Most of the game consists of flying an air car seen top down, over a last moving landscape The objective is to shoot some things collect other things and overall have a blasting good time All of Mikro—Gen s games are expensive but they are often worth hours of playing and the company can match Gremlin Graphics and Gargoyle for ensuring that the quality of conversions is up to scratch

Sigue Sigue Sputnik is becoming more renowned for their publicity stunts lately than for their music and since some of their escapades show signs of high spirits and an unhealthy fascination with the racy side of life I was in two minds when I received an unsolicited Commodore 64 disc through the post This featured nothing more than pictures of the group but we should probably take it as a warning that there is an accompanying game under development somewhere We can only hope that it is in the hands of someone capable such as Denton Designs who did such a creditable job with *Frankie Goes To Hollywood*

The tips for this week come from Mark Gidley who has sent in some pokes for the BBC which he discovered These are
i) for Melbourne House s *Gyroscope*

```
?&1551=x where x=lives
```

Call &D00 to start the game
ii) or *Boffin I & II* from Addictive Games,

```
?&1014=x where x= is the screen you want to start at
```

Call&1010 to start the game
iii) For Software Project s *Ledgeman*,

```
?&2077=lives
?&207A=start screen
```

Call&E00 to start the game
iv) For US Gold s *Bounty Bob Strikes Back*

```
?&E0F=lives
?&E0B=start screen
```

Call&E00 to start the game
v) For US Gold s *Bruce Lee*,
Type in the following

```
*L BRUCE 1900
?&136F=lives
```

Change the tape or disc here if required

```
S BRUCE1 1900+3490 4D80
```

This produces a new and modified version of one part of the game program To load the new game rewind the tape or boot the disc (depending on which format you have *Bruce Lee* on) and run the program from the start However once you have reached the part where you have defined the keys remove the original and insert the version you have made

I am of course very grateful to Mark for his tips, but I know already that some beginners will have problems in using them because not enough information has been given on how to get the pokes in Can I repeat a plea made earlier that contributors make as much effort as they can to ensure that all the required steps are included as clearly as possible

In this particular case it is not critical because Mark writes that he would like a pen pal and would welcome letters from readers of the column who are interested in writing Contact him at 296 Newton Road Rushden, Northamptonshire, NN10 0SY and I am sure he will be willing to help with any problems

As a follow-on to this comment I have decided to begin an occasional course on teaching beginners how to use pokes Experienced readers will have to bear with this but we really do have a lot of letters from people who find the whole thing confusing and I promise that it won t take up much room in any one week

To begin with we will consider some jargon Mark's tips above usually consisted of just two pieces of information – a poke (called a fancy name by Acorn and signified by a ?=command) and a *Call* address What do both of these mean?

For speed and compactness most computer games are written in machine code rather than Basic or any other high level language Machine code doesn t make much sense to ordinary people since it just looks like a series of numbers but these numbers represent commands to the central processor of the computer and as a program is run each of these commands is read and acted on in turn

Some instructions are actually made up of two or three numbers together and sometimes the numbers actually do represent just numbers -- the computer understands what you are trying to get it to do as much by the order in which the numbers are encountered as by which numbers they are

A machine code program is stored in a series of memory locations each referred to by means of an address number – in a 64K computer the numbering would progress from 0 to over 64000 (although some of these addresses may be reserved for the computer s own use) To run a machine code program you just tell the computer the correct address to begin at or the sequence of numbers will be misinterpreted and the game will crash For many hackers this is the hardest piece of information to find Some programmers will begin the game with some dummy instructions or numbers that are never meant to be acted on just to obscure the true starting place To start the program on most computers involves typing *Call address*

Typically one of the memory addresses in the program will be holding a number that refers to the number of lives that the player has If we can find this address it is a simple matter to poke a different number in place to give us more lives before we make the starting *Call*

Programming: QL

Smart Display on the QL

by D. Whittick

Those of you who have ever taken trouble to design a smart screen display should be well aware of the problems created by the *Input* command. Once you have called the routine you are at the mercy of the operator until they hit the enter button, and a lot can happen during that time. You are, for example, powerless to prevent the operator from writing all over your screen and corrupting the display. Even worse, they may try to enter more than 128 characters which will cause your program to bomb out with a "buffer full" error message. Verification of inputted data is also essential. If you request an integer number someone is bound to reply "FRED".

There are of course solutions to all of these problems, but what is really needed is an alternative to the *Input* command that allows the programmer to specify X and Y coordinates, maximum length of input and provides some form of verification.



Look no further. KEYIN is a Superbasic procedure that does all of these. The command syntax is *Keyin channel number, X position, Y position, maximum length, check string*.

The first parameter simply defines which channel to use for input. The second and third parameters are X and Y coordinates that allow the cursor to be positioned correctly. The fourth parameter lets you specify the maximum number of characters that may be entered, and prevents screen corruption and buffer overflow. The final parameter allows you to specify which characters may be entered, and can save a lot of time and trouble by delivering pre-validated inputs.

For example, using "0123456789" as the string will ensure that an integer number is returned. If you required the user to reply, A, B OR C you would use "ABC".

The procedure also checks for the escape key and *Exits* from the procedure if this is detected. The variable *Cancel* is switched positive if *Esc* is used, enabling your program to detect this.

Programming: Spectrum

Double your characters on Spectrum

by S. Vernals

This program has been written to allow any string of characters to be printed at half their normal size thus permitting up to 54 characters to be displayed on one line of the screen. It requires no *Pokes*, just a simple *Usr* call followed by a *Re* statement containing the data to be printed.

Type the program in and run it. Then, after checking that the data is error free, the code can be saved by typing *Save "reduce" 64703,665*.

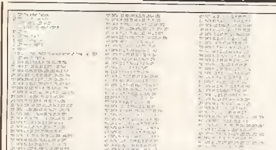
To use the routine in your own Basic programs the following lines must be added to it:

1 Clear 64702
2 Load "reduce" 64703

Adding these lines ensures that Ramtop is set lower and the machine code is loaded above it. Now to call the routine use the following:

20 Randomize Usr 64703
30 Rem place text to be printed here

Please note that the first eight bytes of the UDG file are used so that the graphic "A" cannot be used in your program.



Recovering lost files on the C64

by Duncan Anderson

If you are anything like me, and use a disc drive for programming, you will inevitably have suffered the ultimate 'disaster', whereby you accidently scratch your latest, most important file. If you are new to the complexities of disc filing systems, you would probably give up in despair, and consider the file lost forever. If you are experienced in such matters, you would hurriedly search for a disc monitor, and wade through the directory track and somehow recover it. However neither method is particularly satisfactory, one is a waste of time, the other is complex. So, here is a program to painlessly recover any lost files.

Although the program was written for the 64, it works with a Commodore 128 in both 64 and 128 modes. Furthermore it can be easily adapted for other Commodore computers (Plus/4, C16 and Vic-20) by changing the colour pokes in line 50 and the bell subroutine at lines 6000 to 6070.

The following program achieves its aim, by listing all the deleted entries in the directory. N.B. this is not a complete directory – only a list of deleted files, not all of which may be recoverable. As it does so, it takes the user if he wants the file recovered. If so, a list of file types is displayed. To select the required type (it probably either PRG = program or SEQ = sequential file) move the cursor onto it with the aid of the cursor keys, and then select by pressing *Return*. That is all that is required, no pulling out of hair and no sleepless nights – just a short Basic program is all that is required to resque your masterpiece!

As you will probably have realised, when a scratch command to the Disc Operating System. It does not erase the program from the disc, but merely marks it as deleted in the directory, and releases the disc space for future use. Provided that no subsequent writing to the disc has been performed since the deletion, it is a relatively simple maher to recover the file. To do this, you need to search the directory for the entry (this is the complex part using a disc monitor), and then reset the file type to its original value. The disc is then initialised, in order to update the Block Availability Map.

```
10 rem ********************************
20 rem ****   disc file recovery   ****
30 rem ****  (c) d.anderson        ****
40 rem ********************************
50 Print"",chr$(14),chr$(8), Poke 53280,0 Poke 53281,0
60 Print sPc(11),"DISC FILE RECOVERY"
70 Print sPc(10),"-===================-"
80 Print
90 Print"  Use this Program to recover deleted   "
100 Print sPc(10),"files from your discs."
110 Print'Print
120 Print"Insert disc into drive,"
130 Print"Then Press [RETURN]",
140 inPut a$
145 oPen 15,8,15 oPen 2,8,2,"#"
150 Print Print
5000 rem *** list files in directory ***
5010 t=18 s=1
5020 rem rePeat
5030     Print#15,"u1 2 0",t,s
5035     ot=t os=s
5040     Get#2,t$,s$
5041     if t$<>"" then t=asc(t$)
5042     if t$="" then t=0
```

Programming: C64

```
5043     if s$<>"" then s=asc(s$)
5044     if s$="" then s=0
5050     for n=0 to 7
5060       get#2,ft$ if ft$<>"" then ft=asc(ft$)
5065       if ft$="" then ft=0
5070       get#2,a$,a$
5080       for a=3 to 18
5090         get#2,a$ f$=f$+a$
5100       next a
5110       if not((ft=0 or ft=128)and f$<>"")
 then 5120
5111           Print Print "■",f$,"■"," RECOVER F
ILE (Y/N) ?",
5112           get a$ if a$<>"y" and a$<>"n" then
 goto 5112
5113           gosub 8000
5114           if a$="y" then gosub 8000
5120       f$=""
5130       for a=19 to 31
5140         get#2,a$
5150       next a
5160     next n
5170 if not(t=0 and s=255) then 5020 rem until
 t=0 and s=255
5175 if a$="y" then goto 6000
5180 Print Print spc(8),"NO FURTHER FILES ON D
ISC"
5190 Print Print Print spc(11),"TRY ANOTHER DI
SC ?"
5192 Print#15,"i0"
5195 close 2 close 15
5200 get a$ if a$<>"y" and a$<>"n" then goto 5
200
5205 gosub 8000
5210 if a$="y" then goto 50
5220 end
6000 rem ******* recover file ********
6010 Print"■■■■■■■■■■■■■■■■■■■■■■■■",
6100 ba$=  "■■■■■■■■■■■■■■■■■■■■■■■■■■■"
6200 Print " [SEQ] ■[PRG]■ [USR] [REL]";ba$,
6300 x=2
6400 get a$ if a$="" then 6400
6500 if a$="■" and x<4 then x=x+1
6600 if a$="■" and x>1 then x=x-1
6700 if a$=chr$(13) then ft=(ft or x) gosub 80
00 goto 6000
6710 if x=1 then Print "■[SEQ]■ [PRG] [USR] [R
EL]",ba$,
6720 if x=2 then Print "[SEQ] ■[PRG]■ [USR] [R
EL]",ba$,
6730 if x=3 then Print "[SEQ] [PRG] ■[USR]■ [R
EL]",ba$,
6740 if x=4 then Print "[SEQ] [PRG] [USR] ■[RE
L]■";ba$,
6750 goto 6400
6800 Print#15,"b-P 2",(n*2)+(n*30)+2
6900 Print#2,chr$(ft or 128),
7000 Print#15,"u2 2 0",ot,os
7100 Print#15,"b-P 2",(n*2)+(n*30)+2+19
7200 return
8000 rem ******* bell *********
8002 sid=54272
8005 for l=sid to sid+24 Poke sid,0 next
8010 Poke sid+1,10
8020 Poke sid+5,9
8030 Poke sid+15,30
8040 Poke sid+24,15
8050 Poke sid+4,20
8060 for l=1 to 200 next Poke sid+4,21
8070 return

ready.
```

Programming: Amstrad

3D maze for Amstrad CPC

by J Kennedy

There now follows the remaining half of the 3D Maze listing for the Amstrad CPC computers. If you don't want to type it all in then the game can be obtained, on cassette and with a title screen from J Kennedy, 32 Beyview Road, Bangor, County Down, N Ireland BT19 2AR. Please send £2 but no cheques so use recorded delivery.

```
1610 IF maze%(x-1,y)=1 THEN INK 2,20:INK
 3,20:INK 5,20:INK 7,20:INK 9,20:INK 11,
20:INK 12,20:RETURN
1620 IF maze%(x-1,y+1)=1 THEN INK 5,10 E
LSE IF maze%(x-2,y-1)=1 THEN INK 9,10
1630 IF maze%(x-1,y-1)=1 THEN INK 7,10
ELSE IF maze%(x-2,y-1)=1 THEN INK 11,10
1640 IF maze%(x-1,y)=1 THEN INK 2,10
1650 RETURN
1660 REM look south
1670 IF x=bx AND y+1=by THEN INK 12,26
1680 IF maze%(x+1,y)=1 THEN INK 4,10 ELS
E IF maze%(x+1,y+1)=1 THEN INK 8,20
1690 IF maze%(x-1,y)=1 THEN INK 6,2. ELS
E IF maze%(x-1,y+1)=1 THEN INK 10,20
1700 IF maze%(x,y+1)=1 THEN INK 3,20:INK
 2,20:INK 5,20:INK 7,20:INK 9,20:INK 11,
20:INK 12,20:RETURN
1710 IF maze%(x+1,y+1)=1 THEN INK 5,10 E
LSE IF maze%(x+1,y+2)=1 THEN INK 9,10
1720 IF maze%(x-1,y+1)=1 THEN INK 7,10 E
LSE IF maze%(x-1,y+2)=1 THEN INK 11,10
1730 IF maze%(x,y+2)=1 THEN INK 2,10 ELS
E REM IF maze%(x+1,y-1)=1 THEN INK 8,20
1740 RETURN
1750 REM key press
1760 flag=0
1770 IF INKEY$="" THEN 1770
1780 IF (JOY(0) AND 1 OR INKEY(0) <> -1)
 AND dir=1 AND maze%(x,y-1)=0 THEN y=y-
1:flag=1
1790 IF (JOY(0) AND 1 OR INKEY(0) <> -1)
 AND dir=2 AND maze%(x+1,y)=0 THEN x=x+
1:flag=1
1800 IF (JOY(0) AND 1 OR INKEY(0) <> -1)
 AND dir=3 AND maze%(x,y+1)=0 THEN y=y+
1:flag=1
1810 IF (JOY(0) AND 1 OR INKEY(0) <> -1)
 AND dir=4 AND maze%(x-1,y)=0 THEN x=x-
1:flag=1
1820 IF (JOY(0) AND 4 OR INKEY(8) <> -1)
 THEN dir=dir-1:flag=1:IF dir=0 THEN dir
=4
1830 IF (JOY(0) AND 8 OR INKEY(1) <> -1)
 THEN dir=dir+1:flag=1:IF dir=5 THEN dir
=1
1840 IF flag=1 THEN GOSUB 1260
1850 IF (JOY(0) AND 16 OR JOY(0) AND 32
OR INKEY(9) <> -1) THEN GOSUB 2140:GOSUB
 1920:GOSUB 210:GOSUB 1870:GOSUB 1260

1860 RETURN
1870 REM check
1880 IF ABS(bx-x) < 25 THEN INK 15,(ABS(
bx-x))
1890 IF ABS(by-y) < 25 THEN INK 14,(ABS(
by-y))
1900 IF x=bx AND y=by THEN GOTO 1980
1910 RETURN
1920 REM Blank Iris
1930 INK 12,0
1940 FOR a%=2 TO 13
1950 INK a%,0
1960 NEXT
1970 RETURN
```

```
1980 REM FOUND EXIT
1990 FOR a=1 TO 3000:NEXT a
2000 MODE 0:GOSUB 1920:GOSUB 2430
2010 AFTER 10 GOSUB 2300
2020 AFTER 10,1 GOSUB 236
2030 PEN 1
2040 LOCATE 6,3:PRINT "WELL DONE"
2050 LOCATE 4,12:PRINT "You found the"

2060 LOCATE 3,22:PRINT "in";INT((TIME-t)
1/300);"seconds."
2070 LOCATE 5,24:PEN 2:INK 2,10,26:PRINT
 "PRESS ENTER TO PLAY";
2080 PEN 1 :INK 1,26
2090 col=1
2100 col=col+0.25:IF col=27 THEN col=(

2110 INK 12,col
2120 IF INKEY(18)=-1 THEN 2100
2130 RUN
2140 REM draw maze
2150 MODE 2
2160 FOR a%=1 TO 25:FOR b%=1 TO 80:LOCAT
E 81-b%,a%:IF maze%(a%,b%)=1 THEN PRINT
CHR$(207)
2170 NEXT b%,a%
2180 LOCATE 81-y,x:PRINT CHR$(249)
2190 REM LOCATE 81-by,bx:PRINT "E":leave
 out REM to show exit.(cheat)
2200 LOCATE 1,25:PRINT "    3D Maze was
written by John T Kennedy.CT did the EXI
Ts and DI the Music     ";
2210 IF INKEY$<>"" THEN 2210
2220 IF INKEY$="" THEN 2220
2230 MODE 0
2240 RETURN
2250 REM Tune Data.Thanks to Darren Irvi
ne.Hope he doesn't want any money
2260 DATA 1911,1911,1517,1517,1432,1432,
1351,1276,1911,1911,1517,1517,1432,1432,
1351,1276,1911,1911,1517,1517,1432,1432,
1351,1276,956,1073,1276,1073,1276,1423,1
276,1517
2270 DATA 1432,1432,716,716,804,956,804,
716,1432,1432,716,716,804,956,804,716,14
32,1432,716,716,804,956,804,716,716,358,
804,402,1073,536,1204,602
2280 DATA 1911,1911,1517,1517,1432,1432,
1351,1276,1911,1911,1517,1517,1432,1432,
1351,1276,1911,1911,1517,1517,1432,1432,
1351,1276,956,1073,1276,1073,1276,1423,1
276,1517
2290 DATA 1276,1276,638,638,716,851,716,
638,1276,1276,1012,1012,956,956,902,851,
1432,1432,1136,1136,1073,1073,1012,956,7
16,804,956,804,956,1073,956,1136
2300 SOUND 129,n(bass),0,15,1
2310 SOUND 132,n(bass)*pit,0,15,2
2320 bass=bass+1
2330 IF bass=129 THEN bass=1:envs=-envs:
pit=pit*2:IF envs=1 THEN ENV 1,15,-1,1:E
NV 2,5,-1,4 ELSE ENV 1,15,-1,4:ENV 2,5,-
1,1
2340 IF pit=8 THEN pit=0.5
2350 RETURN
2360 SOUND 130,0,0,13,2,0,
2370 sm=sm+1
2380 IF sm=65 THEN sm=1
2390 IF sm>61 THEN SOUND 130,0,0,15,1,0,
10:RETURN
2400 IF sm/4=INT(sm/4) THEN SOUND 130,0,
0,15,1,0,10
2410 IF sm/2=INT(sm/2) AND sm/4<>INT(sm/
4) THEN SOUND 130,0,0,10,2,0,25
2420 RETURN
2430 REM letters
2440 REM EXITS designed and called out b
y Colin Turner
2450 REM    I hope he doesn't want any m
oney either
2460 PLOT 1000,1000 13
2470 MOVE 60,10:DRAW 190,110:DRAW 240,11
0:MOVE 140,70:DRAW 210,70:MOVE 60,10:DRA
W 160,10
2480 MOVE 200,10:DRAW 310,110:MOVE 300,1
0:DRAW 260,110
2490 MOVE 240,10:DRAW 440,10:MOVE 390,10
:DRAW 355,110:MOVE 330,110:DRAW 380,110
2500 MOVE 400,110:DRAW 450,110:MOVE 425,
110:DRAW 530,10
2510 PLOT 1000,1000,12
2520 MOVE 260,130:DRAW 230,130:DRAW 285,
170:DRAW 295,170:MOVE 260,152:DRAW 20 .
50
2530 MOVE 280,130:DRAW 315,170:MOVE 30,
130:DRAW 305,170
2540 MOVE 330,130:DRAW 360,130:MOVE 345,
130:DRAW 330,170:MOVE 325,170:DRAW 335,1
70
2550 MOVE 395,130:DRAW 351 170:MOVE 345,
170:DRAW 355,170
2560 RETURN
2570 REM Instructions
2580 MODE 1
2590 PEN 1:BORDER 0:INK 1,0:INK 0,0
2600 PRINT"+------------------------------
----------+!              Three Dimensional M
aze        !'                 $ J.kennedy
           '+---- ----------------------
----------+"
2610 PRINT:PRINT
2620 PRINT " The object of this game is
to find the exit hidden somewhere in the
 3D Maze.    To help you ,you have two p
roximity    indicators,one for vertical
and one for horizontal distance from the
 exit."
2630 PRINT " These become darker the clo
ser you get to the exit."
2640 PRINT " To see a map of the maze pr
ess COPY or FIRE on the joystick.Remembe
r - this    takes up time."
2650 PRINT " Use the r cursor key (or jo
ystick) to  turn 90 degrees to the left
the s key toturn to the right and the p
key to go   forward one unit."
2660 PRINT " The arrow at the top of the
 screen willalways point North."
2670 LOCATE 10,25
2680 PRINT "PRESS ENTER TO START"
2690 INK 1,26
2700 EVERY 10,0 GOSUB 2300:EVERY 10,1 GO
SUB 2360
2710 IF INKEY(18)=-1 THEN 2710
2720 RETURN
2730 REM Better leave in REM statements
- I think I
2740 REM GOTO ed a few.
```


Graph program for Atari ST

by Wail Sabbagh

Graph-ST is a sophisticated program written for the Atari ST series utilising two of the most prominent features of the ST computers, the mouse and graphics. It can prove to be useful for both home and small business users.

In short, Graph-ST is the numeric equivalent of a word processor. After the data structure has been defined, users of Graph-ST can plot this data in several formats. Parts of the data can be plotted separately and highlighted and the data can be statistically analysed, edited and stored for later use. Graph-ST allows the user to define up to five blocks of data where each block can be switched on or off during the plotting or analysis process. The program is also supported with a very comprehensive error detection routines.

Graph-ST is controlled by two menus. The first is concerned with defining the

data format although a format defined previously can be loaded from disc The second menu is concerned with the manipulation of the data

Notes on using the program

1) Any screen produced by Graph-ST can be dumped to the printer by pressing the Alternate and Help keys simultaneously. The printer can be installed using the *Install printer* option in the desk top

2) If the program is to be used with a system where the operating system is loaded from disc, then the *Buffered graphic* option on the Basic desk top must be turned off to provide extra memory

3) The program is designed to operate in the 640x400 graphic mode using an Atari mono monitor

Part two of this three part listing is printed next week

```
10   ON ERROR GOTO [illegible]
[illegible] REM**************************************************
************************
[illegible] REM*                          GRAPH-ST
                    *
[illegible] REM*          ATARI 520ST
[illegible] PROGRAM [illegible]   *
[illegible] REM**************************************************
************************
[illegible] REM*                     >>> IMPORTANT<<<
                    *
[illegible] REM*IF USING AN ATARI 520ST SYSTEM W
[illegible] KEY AND TOS ARE      *
[illegible] REM*LOADED FROM SYSTEM DISK THEN [illegible]
[illegible] PROTECT [illegible]  *
[illegible] [illegible] MEMORY, THE BUFFER GRAPH
[illegible]                *
[illegible] REM*[illegible] BASIC [illegible]
[illegible] THIS TO [illegible]     *
[illegible] REM*THE [illegible] MUST BE [illegible] BEFORE TH
E PROGRAM IS [illegible]      *
[illegible] REM*TYPED IN.
                    *
[illegible] REM*[illegible] - FOR VERSION OF THE 52
[illegible]           *
[illegible] [illegible] ALTERATION TO THE [illegible]
[illegible] NECESSARY      *
[illegible] REM**************************************************
[illegible] ****************
[illegible] REM*[illegible] ALL [illegible]
[illegible]  *
[illegible] REM*            THE PROGRAM OPERATES IN c
[illegible]                *
[illegible] REM**************************************************
[illegible] ****************
[illegible] [illegible] CLEARW 2[illegible]
[illegible]
[illegible] [illegible] 
[illegible] [illegible] 
[illegible]
[illegible] [illegible] BOX
[illegible] COLOR 1,[illegible] 2,FILL 2,2
[illegible] GOTOXY 16,2:PRINT "GRAPH-ST"[illegible]
[illegible] GOTOXY [illegible] BAS
[illegible]
[illegible] GOTOXY [illegible]:PRINT "DEFINE DATA FROM
[illegible]
[illegible] GOTOXY [illegible]:PRINT [illegible] DATA [illegible]
[illegible]
[illegible] GOTOXY [illegible]:PRINT "USE YOUR MOUSE TO
SELECT [illegible] AND CLICK LEFT BUTTON"
[illegible] [illegible]
[illegible] IF [illegible] AND [illegible] AND [illegible]
[illegible] THEN GOTO [illegible]
[illegible] IF [illegible] AND [illegible] AND [illegible] AN
[illegible] THEN GOTO RETRIVE
[illegible] [illegible]
[illegible] [illegible]
[illegible]
[illegible] FOR [illegible] TO [illegible]
[illegible] NEXT [illegible] FILL 2,2
250  GOTOXY 3,2:PRINT "PLEASE SELECT WITH
YOUR MOUSE"
260  GOTOXY 3,5:PRINT CHR$(17)", ONE BLOC
K OF DATA ,"MAX 550 ITEMS PER BLOCK"
27[illegible] GOTOXY 3,[illegible]:PRINT CHR$(18)", TWO BLOC
KS OF DATA","MAX 275 ITEMS PER BLOCK"
28[illegible] GOTOXY 3,[illegible] CHR$(19)", THREE BLOC
KS OF DATA ,"MAX [illegible] ITEMS PER BLOCK"
290  GOTOXY 3,14[illegible] CHR$(20)", FOUR BLOC
KS OF DATA ,"MAX [illegible] ITEMS PER BLOCK"
[illegible] GOTOXY 3,17[illegible] CHR$(21)", FIVE BLOC
KS OF DATA","MAX 110 ITEMS PER BLOCK"
[illegible] [illegible]
320  [illegible] 2000:FOR [illegible] TO 5
330  IF [illegible] AND [illegible] AND [illegible]
[illegible] THEN BL=[illegible]
[illegible] NEXT [illegible]:IF BL=0 THEN GOTO [illegible]
[illegible] CLEARW 2,[illegible]
[illegible] BOX [illegible] FILL 2,2
[illegible] GOTOXY 2,[illegible] "YOU HAVE BEEN ALLOCATE
D [illegible] BLOCK(S) WITH "INT(550/BL);
[illegible] PRINT " ITEMS PER BLOCK"
[illegible] [illegible]=INT(550/BL)
[illegible] DIM ITEM(BL,[illegible]),[illegible](BL),COUNTER(B
L),RANGEX(BL,2),STATE(BL)
440  FOR X = 1 TO BL
45[illegible] GOTOXY 2,[illegible]:PRINT [illegible]:GOTOXY
[illegible]
[illegible] PRINT "PLEASE ENTER NAME OF BLOCK [illegible]
[illegible]:INPUT " ",NAMES$(X)
[illegible] IF LEN(NAMES$(X)) [illegible] OR LEN(NAMES$(X)
[illegible] THEN GOTO [illegible]
[illegible] COUNTER(X)=[illegible]:RANGEX(X,[illegible]
[illegible] STATE(X)=0:NEXT
[illegible] REM*************************MENU1***********
************************
5[illegible] MENU1:CLEARW 2:MENU2
52[illegible] FOR S=1 TO [illegible]
[illegible] NEXT G
530  GOTOXY [illegible] CHR$(17)", LINE GRAPH"
540  GOTOXY 2 [illegible] CHR$(18)", BAR CHART"
550  GOTOXY [illegible] CHR$([illegible])", BLOCK ARITHM
ETIC DATA"
560  GOTOXY 2,10:[illegible] CHR$(20)", ENTER VALUE
(S)"
570  GOTOXY 2,[illegible] CHR$(21)", EDIT VALUE
(S)"
5[illegible] GOTOXY 2,[illegible] CHR$(22)", ALTER RANGE
"
[illegible] GOTOXY 2,[illegible] CHR$(23)", SAVE DATA T
O DISK"
60[illegible] GOTOXY 2,[illegible] CHR$([illegible])", NEW SET OF
DATA"
6[illegible] [illegible] BOX
6[illegible] FOR [illegible] TO [illegible]:IF [illegible] THEN Y=200 ELS
E Y [illegible]
625  IF [illegible] THEN [illegible] ELSE [illegible]
640  [illegible] BOX
649  NEXT C
6[illegible] GOTOXY [illegible]:PRINT SPC(20)[illegible] GR
APH-ST COMMAND MENU "CHR$(4)
670  COLOR 1,[illegible],3,FILL 2,2
680  FOR [illegible] TO 5:READ A,B :GOTOXY A,B
690  IF [illegible] THEN PRINT "NOT IN USE":GOTO
73[illegible]
70[illegible] PRINT [illegible]:GOTOXY A,B[illegible]:PRINT ST
RING$(LEN(NAMES$([illegible])),[illegible])
710  GOTOXY A,B+2:PRINT "COUNT="COUNTER([illegible]
-1
720  GOTOXY A,B+3:PRINT RANGEX([illegible],1)"TO"RA
NGEX([illegible],2)
730  NEXT [illegible]:RESTORE
740  DATA [illegible]
750  GOTOXY 2[illegible],12:PRINT "ALTERNATE":GOTO
Y 30,[illegible]:PRINT "AND HELP"
760  GOTOXY 30,14:PRINT "TO DUMP":GOTOXY
30,[illegible]:PRINT "ANY SCREEN"
77[illegible] GOSUB [illegible]:CHOICE=0:FOR [illegible] TO 8
78[illegible] IF [illegible] AND [illegible] AND [illegible] A
ND [illegible] THEN CHOICE=[illegible]
790  NEXT [illegible]:IF CHOICE=0 THEN GOTO 770
8[illegible] IF CHOICE=1 THEN GOTO LINEGRAPH
820  IF CHOICE=2 THEN GOTO BARCHART
830  IF CHOICE=3 THEN GOTO ARITHMATIC
835  IF CHOICE=4 THEN GOTO TYPE
840  IF CHOICE=5 THEN GOTO CHANGE
850  IF CHOICE=6 THEN GOTO RANGE
8[illegible] IF CHOICE=7 THEN GOTO STORE
870  IF CHOICE=8 THEN GOTO EXIT
1000 REM**********************DATA ENTRY****
************
1010 TYPE: [illegible] SELECT:CLEARW 2
[illegible] IF [illegible] THEN ER$="[illegible]
[illegible] FULL TO CAPACITY ERROR":GOTO REPORT
1[illegible] GOTOXY [illegible]:PRINT "BLOCK NAME:"NAMES$(
[illegible])
[illegible] GOTOXY [illegible]:PRINT "ENTERED SO FAR:"CO
UNTER(SL)-1[illegible]
1050 PRINT"----------------------------------
----------------------------------"
10[illegible] GOTOXY [illegible]:PRINT [illegible]
1070 GOTOXY 0,[illegible]:PRINT "ENTER NEXT VALUE (
[illegible] TO EXIT) [illegible] A$
1080 IF A$="[illegible]" THEN IF RANGEX(SL,[illegible]) [illegible]
[illegible] IF COUNTER(SL) [illegible] THEN [illegible]
1[illegible] IF [illegible] THEN GOTO MENU1
[illegible] IF [illegible] THEN GOTO 10[illegible]
[illegible] ITEM(SL,COUNTER(SL)) [illegible]
[illegible] COUNTER(SL)+1
[illegible] RANGEX(SL,2)=COUNTER(SL)-1:GOTO [illegible]
[illegible]
[illegible] REM**********************LINE [illegible]*****
******************
2[illegible] LINEGRAPH: GOSUB [illegible]:CLEARW 2
2020 ER$="[illegible]":FOR [illegible]:IF [illegible] STATE
[illegible] THEN [illegible]:GOTO [illegible]
2030 IF COUNTER([illegible]) [illegible] THEN ER$="MORE THA
N ONE VALUE NEEDED IN BLOCK TO PLOT"
2040 IF RANGEX([illegible])-RANGEX([illegible]) [illegible]
N ER$="INCORRECT BLOCK RANGE"
2050 NEXT [illegible]:IF [illegible] THEN ER$="ALL BLOCK
S ARE OFF"
2055 IF ER$<>"" THEN GOTO REPORT
20[illegible] [illegible] NAMEN
2070 CLEARW 2[illegible]
[illegible] BOX:COLOR 1,1,1,3,3:FILL 2,2
2080 FOR [illegible] TO BL
20[illegible] IF STATE([illegible])=0 THEN GOTO [illegible]
```

Programming: Peek & Poke



With Kenn Garroch

Amstrad Information

Hugh Mitchell Jnr, of Campbeltown in Argyll, writes

Q **I am a 15 year old ZX Spectrum owner and have had this machine for three years. I find that it has too many limitations, eg, memory, storage, sound, etc, for my ambition to become a computer programmer/operator. I am considering buying an Amstrad CPC 6128 but would like a few things cleared up before I do.**

Can Amstrad tape based software be transferred to disc on the 6128 without the need to buy an extra utility program. Is budget range software available on disc for the 6128 for under £5, and could you give me the address to write to for literature on the 6128 that will tell me about the features of the machine?

A The Amstrad 6128 does come with a utility to transfer software from cassette to disc but it will not work with anything that is not Amstrad standard format ie most commercial software, games etc.

Most budget softwere in the price range you mention would not be available on disc due to the high cost of Amstrad 3 inch discs. In any case since all of the Amstrad machines up to the 6128 are tape compatible, the software houses producing budget games probably won't bother producing them on disc for quite a while and almost certainly not for under £5.

For literature about the CPC6128 Amstrad's address is 169 King's Road Brentwood, Essex. *Popular Computing Weekly* devotes a fair bit of space to the CPC machines, and there are four Amstrad – specific monthly magazines available from newsagents.

Reading the Roms on the BBC

B Jennings, of Clwyd in, Wales writes

Q **Many things have been published about the BBC micro, but since I have only had mine for a year or so, there is one thing that I would like to do but don't know how. I want to read the contents of the Roms, to see what is in them.**

A Reading the Roms is easy the Osrdrm routine (&FFB9) will return the contents of the address specified in locations &F6 and &F7, the Rom number in the Y register on entry to the routine. Try the following program

```
10 OSRDRM = &FFB9
20 INPUT "ROM No " Y%
30 FOR T = &8000 TO &C000
40 ?&F6 = T MOD 256
50 ?&F7 = T DIV 256
60 A=USR(OSRDRM) AND &FF
70 IF A>31 THEN PRINT CHR$(A)
80 NEXT
```

Peek and Poke in video

A Hewlett of Peldon, in Essex writes

Q **I have been playing around with my MSX computer, and have come across the *VPeek*, *VPoke* commands. What I don't understand is why these are necessary and what they do.**

A The difference between the way the MSX memory is set out, and the way most other machines do it is that the video Ram (VRam) and ordinary program Ram, are separate. The *VPeek* and *VPoke* commands are used to transfer data via the video chip, to the VRam. Another command *Base* is used to find the position of the various tables in the VRam. Information about character sets, characters on screen, sprite definitions colours and pixels for hi-res. From Basic there is not really the need to use the VRam directly unless you want to put characters directly on to the screen.

The advantage in theory, of having separate video memory, is that the processor doesn't have to spend time accessing it. All it does is send commands to the controller chip which does the work for it. In practice most high speed graphics applications need to access the video Ram as fast as possible, and this means directly. So trying to do fast, fancy machine code graphics on the MSX is quite difficult.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD

Buying advice for games players

M Poleman of Selby in Yorkshire writes

Q **I am thinking of buying a home computer, mainly to play games, which one would you recommend? I don't want to spend too much money, so is there any value in buying second hand?**

A You have more or less three possible choices Spectrum Amstrad and Commodore 64. Of these the C64 and the Spectrum probably have the most games software available although they are both getting a little long in the tooth. The C64 costs around £150 and the Spectrum Plus £95 when bought new. With these you will need some kind of monitor or TV and the Spectrum needs a cassette deck (The Commodore at the moment comes in a package with the cassette included). If you have a cassette player and TV sitting idle, the Spectrum is probably the cheapest option. If, however you are thinking of using your computer for programming or business the Amstrad 6128 and C64 plus disc drive deserve a good look.

As a game playing machine with a great deal of business software available the C64 is reasonably good, if a little expensive (£160 for a disc drive). The Amstrad scores over the other two in the value for money department. As you probably know it comes complete with disc drive and monitor. The green screen version is £299 the colour £100 more expensive at £399.

What you need to do is decide whether you will only be using the machine for playing games or whether sometime in the future, you want to expand your horizons and do a little programming or wordprocessing. The best allround machine is the Amstrad and though, at the moment, there is not as much software available as for the other two machines the situation definitely seems to be improving.

You may well however want to wait a bit before buying either the C64 or the Spectrum, since new versions of both are due to be launched this autumn. The new C64C is essentially a redesigned C64 with some additional operating software. The forthcoming Spectrum Plus 2 to be released by the machine's new owner, Amstrad, will probably have a tape deck built in.

As far as buying a second hand machine goes, the prices are probably not that much cheaper, and unless the offer is a bargain (lots of software, add-ons etc thrown in), you might as well buy new and have some kind of guarantee.

Game pokes put simply

G A Atkinson of Radford in Nottingham writes

Q **I have a Spectrum 128 and lots of games, and I would like to know how to use the Pokes for games, as seen in magazines.**

A Well if you really must cheat then put your Spectrum into 48K mode (assuming it's not a 128K game) and follow the instructions given in the magazines. This is usually a matter of typing in the program given and running it. What the program does is load the game into memory but not execute it. Various operating parameters are then altered with the pokes and the game is run with *Randomise User*.



The intelligent modem and how it works

David Wallin completes the two-part modem series

An intelligent modem is literally a modem with built-in intelligence. Intelligent modems contain their own micro-computer. This consists of a microprocessor a Rom and often Ram as well.

The cpu and Rom control the modem's functions. This means two things. First an intelligent modem will work with almost any computer that has the necessary RS232 pins. Secondly the modem can operate without the computer attached/switched on.

The Ram is used for two things: *sped buffering*, and number directories. A number directory is just a list of numbers and service-names, and the modem can autodial directly from the list without the number having to be entered.

Speed buffering means that a computer that can't handle split speeds (speeds like 1200/75 where Rx and Tx are different) can still connect to a service that requires split speeds (such as Prestel).

Hayes and V25 bis

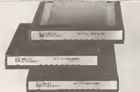
When talking to the modem, you actually use a language or protocol, the most common and oldest is Hayes. This was devised by the American company Hayes Microcomputer Products. There are many Hayes compatible modems on the market, although some are more compatible than others. The CCITT standard protocol for talking to an intelligent modem has the awkward name of V25 bis. The commands are more awkward than the Hayes ones as well. Some companies have their own protocols, such as the DaCom protocol. Usually these protocols are easier to use and are better suited to the individual modem than V25 bis or Hayes.

There are many pieces of communications software available for intelligent modems. Before buying, you should first check that the modem uses the correct protocol for the software. Then you should also check on just how Hayes or V25 bis compatible your modem is. It may not be a full enough implementation for the software. The software manufacturers should be able to tell you if your modem will work.

When you talk to the modem you have to set up your terminal software to put you on-line and set up a certain baud rate and word length, etc (annoyingly the world length, start/stop bits and parity are also called the protocol). Some modems can sense how this is set up automatically and some require you to tell the modem how it is set up by altering DIP switches. The baud rates you can talk to the modem at are called the *Terminal Baud Rates* and the method of sensing is called the *Terminal Baud Rate Setting* (Manual by DIP switches or automatic).

The automatic sensing modems require you to send them a few characters (usually 3 or 4 plus signs on Hayes and a few asterisks on V25 bis). As they know the Ascii value of the character they can work out what speed, etc, that the RS 232 is working at.

Below is a list of four of the best known intelligent modems. There are many others including the WS4000, a sub £150 Hayes modem which has been announced but not yet launched! I'll bring you up to date on that as soon as I can.



One of the intelligent modems, the WS3000

Name	Tm512	WS3000	DSL 2123-AD	DSL 2123-GT
Size (cm)	15 × 3 × 25	16 × 4 × 24	20 × 3 × 21	22 × 6 × 21
Weight	900g	750g	8700g	830g
Power supply	Internal	External	External	External
Modes	V21, V25 mode 2, 1200/1200 ½ duplex	V21, V23 mode 1, V23 mode 2, Bell 103, Bell 202, 1200/1200 ½ duplex	V21, V23 mode 2	V21, V23 mode2
Controls	On/Off	Reset	Reset	V21/23 ORIG/ANS
RS 232 pins	2 7,20	1 10 16 20 22-25	1 10,20,22	1 10,20,22
Terminal baud rates	1200 2400 4800 9600	300 600 1200 2400 1200/75	300 1200	300 1200 2400 4800
Terminal baud rate setting	Auto	Auto	Auto	Dip switches
Protocols	V25 bis	Hayes	DaDom	DaCom
Number store	0	82	32	32
Autodial method	Menu/by number	Menu/by number	Menu (keyword)/by number	Menu (keyword)/by number
Other features	Auto-logon, speaker, Dial tone detect, TTL input	Speaker, Printer port, Ringback, auto-answer	Dial tone detect	ARQ, ACI, auto-logon
Optional	Hayes, EPAD	V22, V22 bis, security		
Manufacturer	Tandata Marketing Ltd, Albert Road North, Malvern, Worcs, WR14 2TL, (06845) 68421	Miracle Technology Ltd, St Peters Street, Ipswich, Suffolk, IP1 1XB, (0473) 216141	DaCom Systems Ltd, Sunrise Parkway, Linford Wood, Milton Keynes, K14 9LU, (0908) 675511	DaCom Systems Ltd, Sunrise Parkway, Linford Wood, Milton Keynes, MK14 9LU, (0908) 675511
Prices (inc VAT)	Standard £255, Hayes £265, EPAD £339	Standard £339	Standard £401	Standard £573

A look at the latest in sound systems

Mark Jenkins with news from the world of micro music . . .

Before going any further, it's worth pointing out that this week's Atari supplement contains a review of the most powerful micro music package about at the moment, the Steinberg Pro 24 system for the 520ST and 1040ST

But on to more affordable systems, such as Supersoft s Microvox monophonic sampler for the Commodore 64 It s Midi-compatible, so sounds can be played either from the computer keyboard or from a synth or sequencer

"The second disc allows you to build up funky brass riffs"

Microvox offers very high quality and several additional features such as echo and pitch shifting Recently Supersoft issued a set of sampled sounds on disc for the system, and we've now had a chance to assess them in detail

The package offers 123 sound comprising 6 502 blocks spread over five double-sided discs – Orchestral and Strings Wind and Brass, Guitars and Basses, Drums and Percussion, Keyboards and Miscellaneous The loading time alone for that little lot comes to a couple of hours so we ve had to skip through to some extent!

The first disc contains a good selection of string instruments played in various styles – plucked bowed and so on – plus some of the familiar orchestral "crashes " without which no sample library would be complete The second disc also offers some crashes this time on brass instruments allowing you to build up powerful-sounding funky brass riffs Guitars and Basses includes everything from electric guitar chords to clean single picked notes and Drums and Percussion includes a wide selection of acoustic and electronic sounds accessed from different keys or different Midi channels so this selection may be one of the most used

At £29 95 the sound library represents excellent value for money (the whole system is around £200 depending on whether the software is on disk or cartridge), but a couple of improvements could be made in the future For instance most of the samples intended for musical playing are taken from musical instruments – no metal sheets or blowing over the top of a bottle – while most of the effects sounds are limited to just that – cash registers dogs barking breaking glass and so on Still, the imaginative home recordist could go about correcting those omissions himself

A letter from J Leplat of South London opens up a few questions about programming for Midi interfaces "I recently managed to buy a Korg DW8000, Commodore 64 Midi interface and a 12-track studio program which isn't very user-friendly Could I write my own programs such as a sound editor, since speed isn't important for that kind of program? The interface instructions don't help at all – could you help? '

"The modern packages ara vastly sophisticated"

What Mr/Ms Leplat has here is an early Jellinghaus (JMS) Midi program one of the first to come onto the market and not terribly well executed It should be relatively easy to improve on such a program if you know the correct way to address the expansion port (see the *Programmer s Reference Guide*) The only problem after you ve worked out how to do that, is that you won t know what Midi information the synthesizer is expecting If you simply want to play notes in sequence, all you need is the Sequential Circuits Official Midi Specification which will allow you to look up the standard codes for Note On, Note Off, Velocity and so on (all this is reproduced in my *Electronic Music for the Commodore 64* book published by Sunshine)

But if you want to edit sounds on the DW8000 you ll need to find its individual System Exclusive codes which Korg aren t likely to reveal to anyone except established software-producing members of the Midi Manufacturers' Association In any case it isn't safe to assume that a slow-running Basic program will be able to cope even with sound editing functions since Midi is very fussy about the speed at which it receives information

The clincher is the fact that the professional software houses have been working hard on Midi applications over the two years or so since the first JMS programs were released and modern packages are vastly more sophisticated than the amateur programmer can match If anyone would be interested in a circuit for a Midi interface with some experimental software, let us know – but for the moment it s best to stick with professional packages such as those from Steinberg who should have a C64 Editor package for the DW8000 before long

Next week, a look at Supersoft's Rhythm King drum machine for the Commodore 64, with some software for the Amstrad sound chip coming up

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12 13 Little Newport Street, London WC2H 7PP Mark would also welcome examples of your own music on audio or program tape or disc



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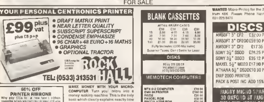
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New Releases

John Cook looks through this week's new srrivals

Pick of the week

Druid – It's a winner

Program *Druid* **Type** Arcade Adventure **Micro** Commodore 64/128 **Price** £7 95 **Supplier** Firebird 74 New Oxford Street London W1

There have been many attempts at producing an arcade version of *Swords & Sorcery/Dungeons & Dragons* games but with limited success

Now comes *Druid*, a superb release from Firebird, which combines fast arcade action with the monsters and spell-casting of a role-playing game

The obvious attraction of *Druid* is its superb graphics – solid colourful characters, nicely animated But beyond this, the gameplay is, to coin a phrase, wizard

Your adversaries include ghosts, beetles demons and sundry other malevolent types who must be disabused of their evil notions by the violent application of magic spells

Different foes are susceptible to different types of magic You need to work out which are which

You'll also need to find key spells to open doors and chaos spells which are like old-technology smart bombs

Invisibility spells will come in useful, as will golems A golem is a magic servant who will do your bidding It is highly resistant to damage so you can use it to clear out tricky rooms or to guard your back

It is possible to control the golems yourself but this involves very fast manipulation of keyboard and joystick Far better to employ a willing friend on a spare joystick

Far more than just an arcade zap *Druid* requires fast reflexes, a good memory and puzzle-solving skills

Initially for the Commodore 64 *Druid* will be converted for the Spectrum and Amstrad Keep an eye open for it – it s a winner

Amstrad CPCs

Program *Advanced Music System* **Type** Utility **Micro** Amstrad 664/6128 **Price** £29 95 **Supplier** Rainbird 74 New Oxford Street, London WC1A 1PS

Program *The Boggit* **Type** Adventure/Humour **Micro** Amstrad **Price** £7 95 **Supplier** CRL 9 Kings Yard, Carpenters Road, London E15

Program *Breakpoint* **Type** Utility **Micro** Amstrad **Price** £14 95 **Supplier** Melbourne house 60 High Street Hampton Wick Kingston-upon-Thames Surrey

Program *Cauldron II – the Pumpkin Strikes Back* **Type** Arcde Adventure **Micro** Amstrad **Price** £8 99 **Supplier** Palace Software 275 Pentonville Road London N1 9NL

Program *Jewels of Darkness* **Type** Adventure **Micro** Amstrad **Price** £14 95 cassette £19 95 disc **Supplier** Level 9/Rainbird address above

Program *Knight Games* **Type** Arcade/Simulation **Micro** Amstrad **Price** £8 95 cassette £14 95 disc **Supplier** English Software, 1 North Parade, Parsonage Gardens Manchester M60 1BX

Program *Monsters of Murdac* **Type** Advtenure **Micro** Amstrad **Price** 7 95 cassette £14 95 disc **Supplier** Global Software PO Box 67 London SW11

Program *Nexus* **Type** Arcade Adventure **Micro** Amstrad **Price** £9 95 **Supplier** Nexus DSB House 30 The High Street Beckenham Kent BR2 0XW

Program *Room Ten* **Type** Arcade **Micro** Amstrad 664/6128 **Price** £14 95 **Supplier** CRL, address above

Program *Very Big Cave* **Type** Adventure **Micro** Amstrad 664/6128 **Price** £14 95 (disc only) **Supplier** CRL, address above

Atari XL/XE

Program *Ninja* **Type** Arcade/Simulation **Micro** Atari 400/800 **Price** £2 99 **Supplier** Mastertronic 8-10 Paul Street, London EC2A

C16/Plus/4

Program *King Size Turbo Tape* **Type** Utility **Micro** C16/Plus/4 **Price** £4 95 **Supplier** Robtek, address above

Program *King Size Turbo Text* **Type** Utility **Micro** C16/Plus/4 **Price** £4 95 **Supplier** Robtek, address above

Program *King Size Turbo Base* **Type** Utility **Micro** C16/Plus/4 **Price** £4 95 **Supplier** Robtek address above

Program *Trizons* **Type** Arcade **Micro** C16/Plus/4 **Price** £2 99 **Supplier** Bubble Bus, 87 High Street Tonbridge Kent TN9 1RX

Program *Tazz* **Type** Arcade **Micro** C16/Plus/4 **Price** £2 99 **Supplier** Bubble Bus address above

Commodore Amiga

Program *The Pawn* **Type** Adventure **Micro** Amiga **Price** £24 95 **Supplier** Rainbird 74 New Oxford Street, London WC1A 1PS

Commodore 64/128

Program *3D Golf* **Type** Simulation **Micro** Commodore 64 **Price** £2 99 **Supplier** Mastertronic 8-10 Paul Street, London EC2A

There has of course, been a rash of golf and cricket games lately Summer I suppose Here s another

Sadly we re really scraping the barrel now While we can t expect all of Mastertronic s games to be up to the standard of *The Last V8* or *Spellbound*, *3D Golf* represents a wasted effort

Too much time has been spent on making the golfer walk from his trolley to the ball and not enough on making the game playable

The graphics are rather nice but everything is seen from behind the golfer This means you have no idea how far from the hole you are

Furthermore, the animation of the ball in flight is really quite laughable

Following in the fairways of Ariolasoft s excellent *Golf Construction Set*, and US Gold s even better *Leader Board*, *3D Golf* is left in the bunker

Program *Filemaster* **Type** Utility **Micro** Commodore 64/128 **Price** £29.95 **Supplier** Robtek, Unit 4, Isleworth Middlesex

Program *Iridis Alpha* **Type** Arcade **Micro** Commodore **Price** £8 95 **Supplier** Hewson/Llamasoft 56B Milton Trading Estate Milton Abingdon Oxon OX14 4RX

Jeff Minter games invite superlatives which can t be applied to the output of other programmers, such as hoopy, zarjaz, well cosmic and far out ma-a-a-an All the above certainly apply to *Iridis Alpha* which is a sort of mutant *Defender* played on two mirrored planet surfaces at once

Your Gilby Fighter is capable of flying through space zapping the alien defenders of Iridis Alpha or of becoming a scuttling land-crab craft Your task is to keep the energy balance of the two planets level, and to feed the planetary core enough energy to boost you through a warp gate to the next level

Iridis Alpha features lots of the usual Minter specialities noisy sound effects weird sprites incredibly fast action and non-stop zapping

With a gamelet in pause mode a cosmic bonus routine featuring flying eyes and a promised pseudo-random music generator on the way the 200-level *Iridis Alpha* is a shoot-em-up without the mindless". As the first release on the Hewson/Llamasoft label, it promises good things to come from Minter, who is still able to take a simple idea – in this case a basic *Defender*-style game – and transform it into another classic arcade program

Program *King Size* **Type** Compilation **Micro** Commodore 64 (only) **Price** £4 95 **Supplier** Robtek Unit 4 Isleworth Business Complex St John s Road, Isleworth Middlesex

Program *Jewels of Darkness* **Type** Adventure **Micro** Commodore 64 **Price** £14 95 cassette and disc **Supplier** Level 9/Rainbird, 74 New Oxford Street, London WC1A 1PS

Program *Very Big Cave Adventure* **Type** Adventure **Micro** Commodore 64 (disc) **Price** £12 95 **Supplier** CRL, address above

Program *Rocky Horror Show* **Type** Arcade Adventure **Micro** Commodore 128 (enhanced) **Price** £9 95 cassette £14 95 disc **Supplier** CRL, 9 Kings Yard, Carpenters Road London E15

MSX

Program *King Size* **Type** Compilation **Micro** MSX **Price** £4 95 **Supplier** Robtek, Unit 4 Isleworth, Business Complex Isleworth Middlesex

PCW 8256/8512

Program *Jewels of Darkness* **Type** Adventure **Micro** PCW 8256/8512 **Price** £19 95 **Supplier** Rainbird, 74 New Oxford Street London WC1A 1PS

Program *Monster of Murdac* **Type** Adventure **Micro** PCW 8256/8512 **Price** £19 95 **Supplier** Global Software PO Box 97, London SW11

Program *SAS Raid* **Type** Arcade **Micro** PCW 8256 **Price** £14 95 **Supplier** CRL, 9 Kings Yard, Carpenters Road London E15

SAS Raid has a scenario where logic goes in true SAS style out of the window It s like this you see vitally important plans have been filched and if someone doesn t get them back then, shock horror your base will be wiped out within the hour

For some reason knowing where and when the attack will take place avails you not and even worse instead of sending out a squad of the lads to do the business you have to go it alone

The game involves moving and I use the word reluctantly as nothing is animated here, your stick insect figure through the game collecting objects and avoiding patrols as you seek to recover the stolen plans

Graphically, *SAS Raid* is so crude that it would look poor on a ZX81 and as a game it is only marginally more exciting than a blank disc

Sinclair QL

Program *Nucleon* **Type** Utility **Micro** QL **Price** £19 95 **Supplier** Pyramide Reo Promotions, 28 Waverley Grove London N3

Spectrum

Program *3D Golf* **Type** Simulation **Micro** Spectrum **Price** £2 99 **Supplier** Mastertronic 8-10 Paul Street London EC2A (01-377 6880)

Program *Cauldron II – the Pumpkin Strikes Back* **Type** Arcade Adventure **Micro** Spectrum **Price** £8 99 **Supplier** Palace Software 275 Pentonville Road London N1

Program *Lap of the Gods* **Type** Arcade **Micro** Spectrum 48K **Price** £1 99 **Supplier** Mastertronic 8-10 Paul Street London EC2A (01-377 6880)

Program *Octagon Squad* **Type** Arcade **Micro** Spectrum 48K **Price** £1 99 **Supplier** Mastertronic, 8-10 Paul Street London EC2A (01-377 6880)

Program *Spellbound 128* **Type** **Micro** Spectrum 128 **Price** £2 99 **Supplier** Mastertronic 8-10 Paul Street London EC2A

MEMORIES WERE MADE FOR THESE...



THE SUNSET VIDEO DIGITISER



DESCRIPTION OF DIGITISER
The SUNSET professional digitiser is for use with the Spectrum 48K
The video digitiser consists of a compact plug-in interface attached to the Spectrum and a suit of software
It is fully compatible with Microdrive units and allows you to transfer any stationary video picture onto your computer screen

USES
If you are writing your own games, this is for you
This system will put professional digitised pictures into your games directly from your posters or video film

Create superb visual effects by taking a stored digitised picture and running it through a spectrum drawing program
Use it for scientific analysis
It can be used for promotional purposes

OTHER FEATURES
On screen picture signal analyser
All settings fully software controlled
Location of Digitised picture is adjustable within incoming picture
Save and retrieve high resolution 256 x 192 x 4 bit picture for later analysis in your own program

TECHNICAL DESCRIPTION
The digitiser will operate with any 625 line composite video output e g as from video camera or video recorder on still frame Digitises a full 256 x 192 x 4 bit picture Displays this on your computer screen Automatic adjustment of levels for best use of incoming video signal
The selection of slice and grey scale levels, can be made after digitising to achieve the ideal picture
Pictures may be dumped to cassette or microdrive for use in your own programs or with one of the spectrum drawing programs Fully menu driven and very simple to use supplied with a comprehensive manual. Amstrad version available soon

Top Twenty

1	(2)	Leaderboard	US Gold
2	(1)	Ghosts and Goblins	Elite
3	(4)	Green Beret	Imagine
4	(3)	Kung Fu Master	US Gold
5	(5)	Jack The Nipper	Gremlin Graphics
6	(6)	Ninja Master	Firebird
7	(9)	Kik Start	Mastertronic
8	(18)	Knight Games	English
9	(7)	Molecule Man	Mastertronic
10	(13)	Thrust	Firebird
11	(11)	ACE	Cascade
12	(12)	Knight Tyme	Mastertronic
13	(–)	Theatre Europe	PSS
14	(8)	Formula One Simulator	Mastertronic
15	(–)	Commando	Elite
16	(–)	Tau Ceti	CRL
17	(10)	Speed King	Mastertronic
18	(16)	Bomb Jack	Elite
19	(–)	Kane	Mastertronic
20	(14)	Way Of The Tiger	Gremlin Graphics

Leaderboard goes back to number one

Top Tens

All figures compiled by Gallup/Microscope

Amstrad

1	(–)	Ghosts and Goblins	(Elite)
2	(5)	Kane	(Mastertronic)
3	(7)	Harvey Headbanger	(Firebird)
4	(2)	Elite	(Firebird)
5	(6)	Green Beret	(Imagine)
6	(4)	Molecule Man	(Mastertronic)
7	(8)	Storm	(Mastertronic)
8	(9)	Radzone	(Mastertronic)
9	(–)	Winter Games	(Epyx/US Gold)
10	(–)	Jack the Nipper	(Gremlin)

Green Beret – consistently near the top

Commodore 64

1	(1)	Leaderboard	(US Gold)
2	(4)	Green Beret	(Imagine)
3	(2)	Ghosts and Goblins	(Elite)
4	(5)	Knight Games	(English)
5	(8)	Thrust	(Firebird)
6	(6)	Ninja Master	(Firebird)
7	(3)	Speed King	(Mastertronic)
8	(–)	Tau Ceti	(CRL)
9	(–)	Solo Flight 2	(US Gold)
10	(10)	Bump Set Spike	(Mastertronic)

Atari

1	(2)	Kik Start	(Mastertronic)
2	(–)	Vegas Jackpot	(Mastertronic)
3	(1)	Bear Belly	(Americana)
4	(6)	Last V8	(Mastertronic)
5	(–)	Warriors of Ras	(US Gold)
6	(–)	One Man	(Mastertronic)
7	(–)	Mercenary	(Novagen)
8	(9)	New York City	(Americana)
9	(–)	Action Biker	(Mastertronic)
10	(–)	Second City	(Novagen)

BBC

1	(1)	Thrust	(Superior)
2	(4)	Commando	(Elite)
3	(2)	Air Wolf	(Elite)
4	(5)	Cricket	(Bugbyte)
5	(3)	Tennis	(Bugbyte)
6	(–)	Ian Botham	(Tynesoft)
7	(–)	Winter Olympics	(Tynesoft)
8	(7)	Star Force 7	(Bugbyte)
9	(–)	Repton 2	(Superior)
10	(–)	Citadel	(Superior)

Spectrum

1	(2)	Kung Fu Master	(US Gold)
2	(1)	Jack the Nipper	(Gremlin)
3	(3)	Ghosts and Goblins	(Elite)
4	(8)	ACE	(Cascade)
5	(4)	Ninja Master	(Firebird)
6	(5)	Molecule Man	(Mastertronic)
7	(–)	Theatre Europe	(PSS)
8	(8)	Knight Tyme	(Mastertronic)
9	(–)	Bobby Bearing	(The Edge)
10	(10)	Green Beret	(Imagine)

NEXT WEEK

GEOS — a full review

GEOS is the operating environment bundled with Commodore's new C64C, providing the redesigned 64 with easy to use graphics, from *GEO Paint*, and multiple font word processor, *GEO Write*.

Popular brings you the first full review of the latest version of GEOS, in a special colour two-part article.

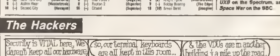
Further steps in C

If our introductory languages series interested you, take a look next week, when Leon Heller takes his explanation of C a bit further, with a terminal emulation program to type in.

Programming

Mark Sutter explains how to use Spectrum subroutines, plus two games to type in; *UXB* on the Spectrum, and *Space War* on the BBC.

The Hackers





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